S5512

Version 1.00

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About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This guide contains the following parts:

Chapter1: Instruction

This chapter describes the features of the motherboard and the new technology it supports.

Chapter2: Board Installation

This chapter lists the hardware setup procedures that you need to abide by when installing system components. It includes description of the jumpers and connectors on the motherboard.

Chapter3: BIOS Setup

This chapter tells how to change system settings through the BIOS setup menu. Detailed descriptions of the BIOS parameters are also provided.

Chapter4: Diagnostics

This chapter introduces some BIOS codes and technical terms to provide better service for the customers.

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Before you begin…

Check the box contents!

The retail motherboard package should contain the following:

	1x S5512 Motherboard
	6 x Serial ATA Cable or 8 x Serial ATA Cable
	1 x USB2.0 Cable
	1 x I/O shield
	1 x I/O shield Installation Guide
	1 x S5512 User's manual
	1 x S5512 Quick reference guide
	1 x TYAN® Driver CD

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

Chapter 1: Instruction

1.1 - Congratulations

You have purchased one of the most powerful server solutions. Based on the Intel® Cougar Point PCH chipset, the TYAN® S5512 series motherboard is designed to support Intel® LGA1155 Socket H2 with both Dual Core (up to 4 threads) and Quad Core(up to 8 threads) series processor. It is up to 32GB for UDDRIII with ECC. The memory interface supports speed up to 1333/1066 MH/z. There are also 2 channels with 4 DDR3 DIMMs, providing a rich feature set and incredible performance. Leveraging the advanced technology from Intel®, the TYAN® S5512 series is capable of offering a scalable 32 and 64-bit computing environment with high-bandwidth memory design and lightning-fast PCI-E Gen2 bus implementation.
The S5512 not only empowers you in today's demanding IT environment but also offers a smooth path for future application upgradeability. All of these rich feature sets provides the S5512 with the power and flexibility to meet demanding requirements for today's IT environments.

The TYAN S5512 series is designed around several different configurations which are detailed in the following 1.2 Hardware Specification section:

1.2 - Hardware Specifications

TYAN S5512 (S5512GM2NR)

Processor	**Supported CPU Series**	Intel Xeon Processor E3-1200 series, Intel Core i3-2100 series
	Socket Type / Qty	LGA 1155/ (1)
	Thermal Design Power (TDP) wattage	Max up to 95W
Chipset	**PCH**	Intel C204
	Super I/O	Nuvoton 5577D
Memory	**Supported DIMM Qty**	(4) DIMM slots
	DIMM Type / Speed	Unbuffered ECC DDR3 / 1333/1066
	Capacity	Up to 32GB
	Memory channel	2 Channels
	Memory voltage	1.5V
Expansion Slots	**PCI-E**	(1) PCI-E Gen.2 x16 slot (w/ x8 link) / (1) PCI-E Gen.2 x8 slot (w/ x4 link) / (1) PCI-E Gen.2 x8 slot / (2) PCI-E Gen.2 x1 slots
	Note:	PCI-E Gen. 2 x16 slot (w/ x8 link) can be x16 link for customized purpose
	PCI	(1) PCI 32-bit slot

LAN	**Port Qty**		(2)
	Controller		Intel 82574L
Storage	**SATA**	**Connector**	(6) SATA
		Controller	Intel C204
		Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		1600x1200@60Hz
	Chipset		Aspeed AST2150
TPM(Optional)	**Chipset**		Infineon SLB9635 (not included in standard version, can add for customized purpose)
	Version		TPM v1.2
Input /Output	**USB**		(10) USB2.0 ports (4 at rear, 4 via cable, 2 vertical onboard)
	COM		(2) ports (1 at rear, 1 via cable)
	VGA		(1) D-Sub 15-pin VGA port
	RJ-45		(2) GbE ports
	Power		SSI 24-pin + 8-pin power connectors / SSI EEB Spec V.96
	Front Panel		(1) 2x12-pin SSI front panel header
	SATA		(4) SATA-II and (2) SATA-III connectors
System Monitoring	**Chipset**		Nuvoton 5577D
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Fan		Total (5) 4-pin headers
	Temperature		Monitors temperature for CPU & system environment
	LED		Fan fail LED indicator / Over temperature warning indicator / Fan & PSU fail LED indicator
	Others		Chassis intrusion detection / Watchdog timer support
Server Management	**Onboard Chipset**		Onboard Aspeed AST2150
	AST2150 IPMI Feature		IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2150 iKVM Feature		24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces
BIOS	**Brand / ROM size**		8MB / AMI
	Feature		Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Physical Dimension	**Form Factor**		ATX
	Board Dimension		12"x9.6" (305x243.8mm)
Operating System	**OS supported list**		Please refer to our OS supported list.
Regulation	**FCC (DoC)**		Class B
	CE (DoC)		Yes
Operating	**Operating Temp.**		10° C ~ 35° C (50° F~ 95° F)

Environment	**Non-operating Temp.**	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	**RoHS 6/6 Complaint**	Yes
Package Contains	**Motherboard**	(1) S5512 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

TYAN S5512 (S5512WGM2NR)

Processor	**Supported CPU Series**		Intel Xeon Processor E3-1200 series, Intel Core i3-2100 series
	Socket Type / Qty		LGA 1155/ (1)
	Thermal Design Power (TDP) wattage		Max up to 95W
Chipset	**PCH**		Intel C204
	Super I/O		Nuvoton 5577D
Memory	**Supported DIMM Qty**		(4) DIMM slots
	DIMM Type / Speed		Unbuffered ECC DDR3 / 1333/1066
	Capacity		Up to 32GB
	Memory channel		2 Channels
	Memory voltage		1.5V
Expansion Slots	**PCI-E**		(1) PCI-E Gen.2 x16 slot (w/ x8 link) / (1) PCI-E Gen.2 x8 slot (w/ x8 link)/(2) PCI-E Gen.2 x1 slots
	Note:		PCI-E Gen. 2 x16 slot (w/ x8 link) can be x16 link for customized purpose
	PCI		(1) PCI 32-bit slot
LAN	**Port Qty**		(2)
	Controller		Intel 82574L
Storage	**SAS**	**Connector**	(8) SAS
		Controller	LSI SAS2008
		Speed	6.0 Gb/s
		RAID	RAID 0/1/1E/10 (LSI Integrated RAID)
	SATA	**Connector**	(6) SATA
		Controller	Intel C204
		Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		1600x1200@60Hz
	Chipset		Aspeed AST2150
TPM(Optional)	**Chipset**		Infineon SLB9635 (not included in standard version, can add for customized purpose)
	Version		TPM v1.2

Input /Output	USB	(10) USB2.0 ports (4 at rear, 4 via cable, 2 vertical onboard)
	COM	(2) ports (1 at rear, 1 via cable)
	VGA	(1) D-Sub 15-pin VGA port
	RJ-45	(2) GbE ports
	Power	SSI 24-pin + 8-pin power connectors / SSI EEB Spec V.96
	Front Panel	(1) 2x12-pin SSI front panel header
	SATA	(4) SATA-II and (2) SATA-III connectors
	SAS	(8) SAS Connector
System Monitoring	Chipset	Nuvoton 5577D
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Fan	Total (5) 4-pin headers
	Temperature	Monitors temperature for CPU & system environment
	LED	Fan fail LED indicator / Over temperature warning indicator / Fan & PSU fail LED indicator
	Others	Chassis intrusion detection / Watchdog timer support
Server Management	Onboard Chipset	Onboard Aspeed AST2150
	AST2150 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2150 iKVM Feature	24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces
BIOS	Brand / ROM size	8MB / AMI
	Feature	Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Physical Dimension	Form Factor	ATX
	Board Dimension	12"x9.6" (305x243.8mm)
Operating System	OS supported list	Please refer to our OS supported list.
Regulation	FCC (DoC)	Class B
	CE (DoC)	Yes
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Complaint	Yes
Package Contains	Motherboard	(1) S5512 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SAS/SATA	(8) SAS/SATA signal cables

TYAN S5512 (S5512G2NR-LE)

Processor	**Supported CPU Series**		Intel Xeon Processor E3-1200 series, Intel Core i3-2100 series
	Socket Type / Qty		LGA 1155/ (1)
	Thermal Design Power (TDP) wattage		Max up to 95W
Chipset	**PCH**		Intel C202
	Super I/O		Nuvoton 5577D
Memory	**Supported DIMM Qty**		(4) DIMM slots
	DIMM Type / Speed		Unbuffered ECC DDR3 /1333/1066
	Capacity		Up to 32GB
	Memory channel		2 Channels
	Memory voltage		1.5V
Expansion Slots	**PCI-E**		(1) PCI-E Gen.2 x16 slot (w/ x8 link)/(1) PCI-E Gen.2 x8 slot / (2) PCI-E Gen.2 x1 slots
	Note:		PCI-E Gen. 2 x16 slot (w/ x8 link) can be x16 link for customized purpose
	PCI		(1) PCI 32-bit slots
LAN	**Port Qty**		(2)
	Controller		Intel 82574L
Storage	**SATA**	**Connector**	(6) SATA
		Controller	Intel C202
		Speed	3.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		1600x1200@60Hz
	Chipset		Aspeed AST2150GP-V
TPM(Optional)	**Chipset**		Infineon SLB9635 (not included in standard version, can add for customized purpose)
	Version		TPM v1.2
Input /Output	**USB**		(8) USB2.0 ports (4 at rear, 4 via cable)
	COM		(1) port (1 at rear)
	VGA		(1) D-Sub 15-pin VGA port
	RJ-45		(2) GbE ports
	Power		SSI 24-pin + 8-pin power connectors / SSI EEB Spec V.96
	Front Panel		(1) 2x12-pin SSI front panel header
	SATA		(6) SATA-II connectors
System Monitoring	**Chipset**		Nuvoton 5577D
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Fan		Total (5) 4-pin headers
	Temperature		Monitors temperature for CPU & system environment
	LED		Fan fail LED indicator / Over temperature warning indicator / Fan & PSU fail LED indicator

	Others	Chassis intrusion detection / Watchdog timer support
BIOS	**Brand / ROM size**	8MB / AMI
	Feature	Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Physical Dimension	**Form Factor**	ATX
	Board Dimension	12"x9.6" (305x243.8mm)
Operating System	**OS supported list**	Please refer to our OS supported list.
Regulation	**FCC (DoC)**	Class B
	CE (DoC)	Yes
Operating Environment	**Operating Temp.**	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	**RoHS 6/6 Complaint**	Yes
Package Contains	**Motherboard**	(1) S5512 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

TYAN S5512 (S5512GM4NR)

Processor	**Supported CPU Series**	Intel Xeon Processor E3-1200 series, Intel Core i3-2100 series
	Socket Type / Qty	LGA 1155/ (1)
	Thermal Design Power (TDP) wattage	Max up to 95W
Chipset	**PCH**	Intel C204
	Super I/O	Nuvoton 5577D
Memory	**Supported DIMM Qty**	(4) DIMM slots
	DIMM Type / Speed	Unbuffered ECC DDR3 /1333/1066
	Capacity	Up to 32GB
	Memory channel	2 Channels
	Memory voltage	1.5V
Expansion Slots	**PCI-E**	(1) PCI-E Gen.2 x16 slot (w/ x8 link) / (1) PCI-E Gen.2 x8 slot (w/ x4 link) / (1) PCI-E Gen.2 x8 slot / (2) PCI-E Gen.2 x1 slots
	Note:	PCI-E Gen. 2 x16 slot (w/ x8 link) can be x16 link for customized purpose
	PCI	(1) PCI 32-bit slots
LAN	**Port Qty**	(4)
	Controller	Intel 82574L

Storage	**SATA**	**Connector**	(6) SATA
		Controller	Intel C204
		Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		1600x1200@60Hz
	Chipset		Aspeed AST2150
TPM(Optional)	**Chipset**		Infineon SLB9635 (not included in standard version, can add for customized purpose)
	Version		TPM v1.2
Input /Output	**USB**		(10) USB2.0 ports (4 at rear, 4 via cable, 2 vertical onboard)
	COM		(2) ports (1 at rear, 1 via cable)
	VGA		(1) D-Sub 15-pin VGA port
	RJ-45		(4) GbE ports
	Power		SSI 24-pin + 8-pin power connectors / SSI EEB Spec V.96
	Front Panel		(1) 2x12-pin SSI front panel header
	SATA		(4) SATA-II and (2) SATA-III connectors
System Monitoring	**Chipset**		Nuvoton 5577D
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Fan		Total (5) 4-pin headers
	Temperature		Monitors temperature for CPU & system environment
	LED		Fan fail LED indicator / Over temperature warning indicator / Fan & PSU fail LED indicator
	Others		Chassis intrusion detection / Watchdog timer support
Server Management	**Onboard Chipset**		Onboard Aspeed AST2150
	AST2150 IPMI Feature		IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2150 iKVM Feature		24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces
BIOS	**Brand / ROM size**		8MB / AMI
	Feature		Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Physical Dimension	**Form Factor**		ATX
	Board Dimension		12"x9.6" (305x243.8mm)
Operating System	**OS supported list**		Please refer to our OS supported list.
Regulation	**FCC (DoC)**		Class B
	CE (DoC)		Yes
Operating Environment	**Operating Temp.**		10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.		- 40° C ~ 70° C (-40° F ~ 158° F)

	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Complaint	Yes
Package Contains	Motherboard	(1) S5512 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

S5512 SKU Comparison Table

Model	Chip	LAN	IPMI	USB Type-A	8-pin Fan connector	PCI-e Slot	SAS	SATA
S5512GM2NR	C204	2	Yes	2	5	5	0	6
S5512WGM2NR	C204	2	Yes	2	5	4	8	6
S5512G2NR-LE	C202	2	No	0	0	4	0	6
S5512GM4NR	C204	4	Yes	2	5	5	0	6

1.3 - Software Specifications

For OS (operation system) support, please check the TYAN® website for the latest information.

1.4 - AST2150 User Guide

Remember to visit TYAN®'s Website at http://www.TYAN.com for AST2050 updated user guide.

Chapter 2: Board Installation

You are now ready to install your motherboard.

How to install our products right… the first time

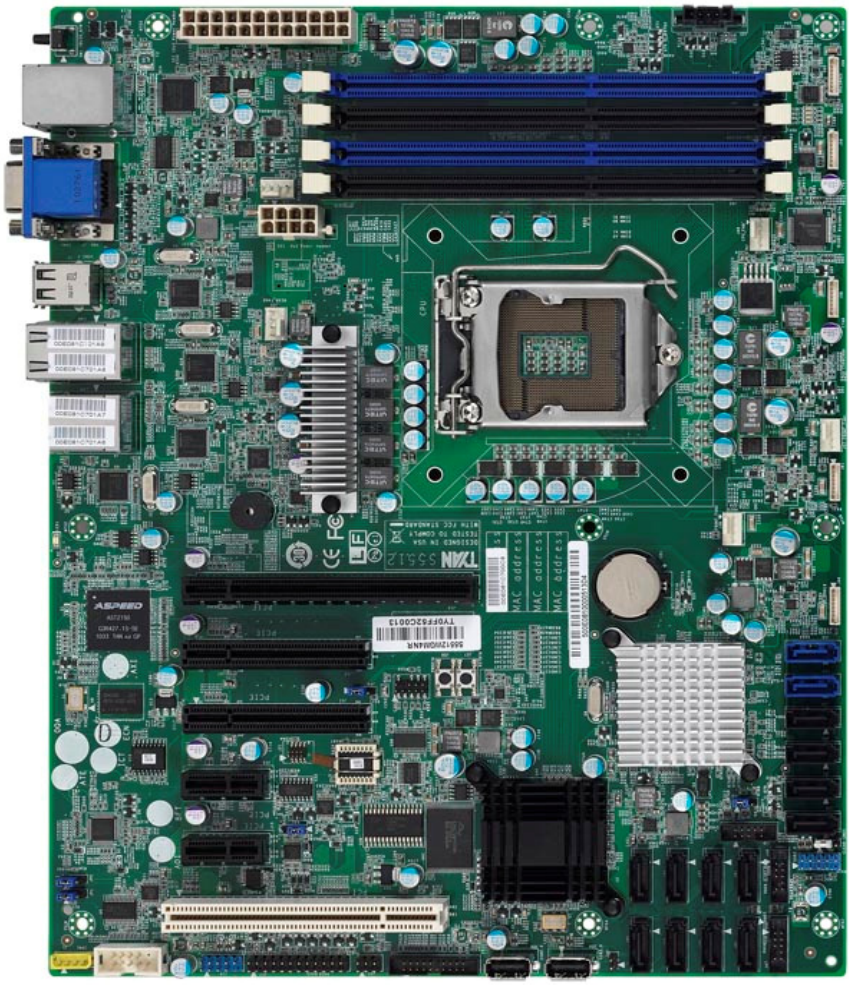
The first thing you should do is reading this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN® recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

DO NOT apply power to the board if it has been damaged.

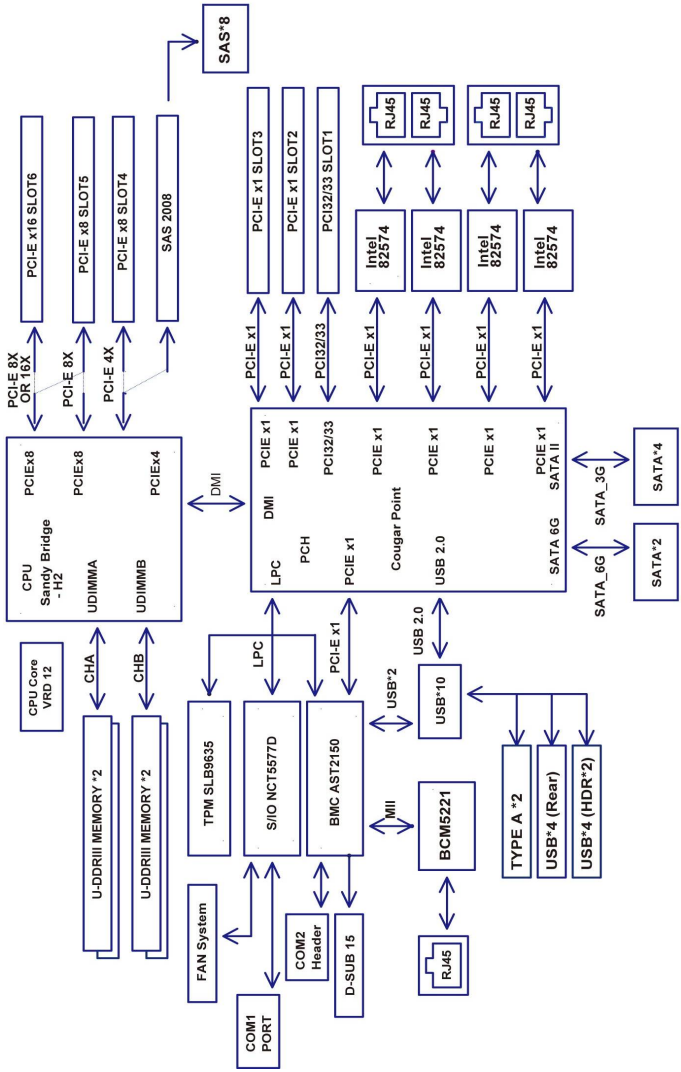
2.1 - Board Image



S5512

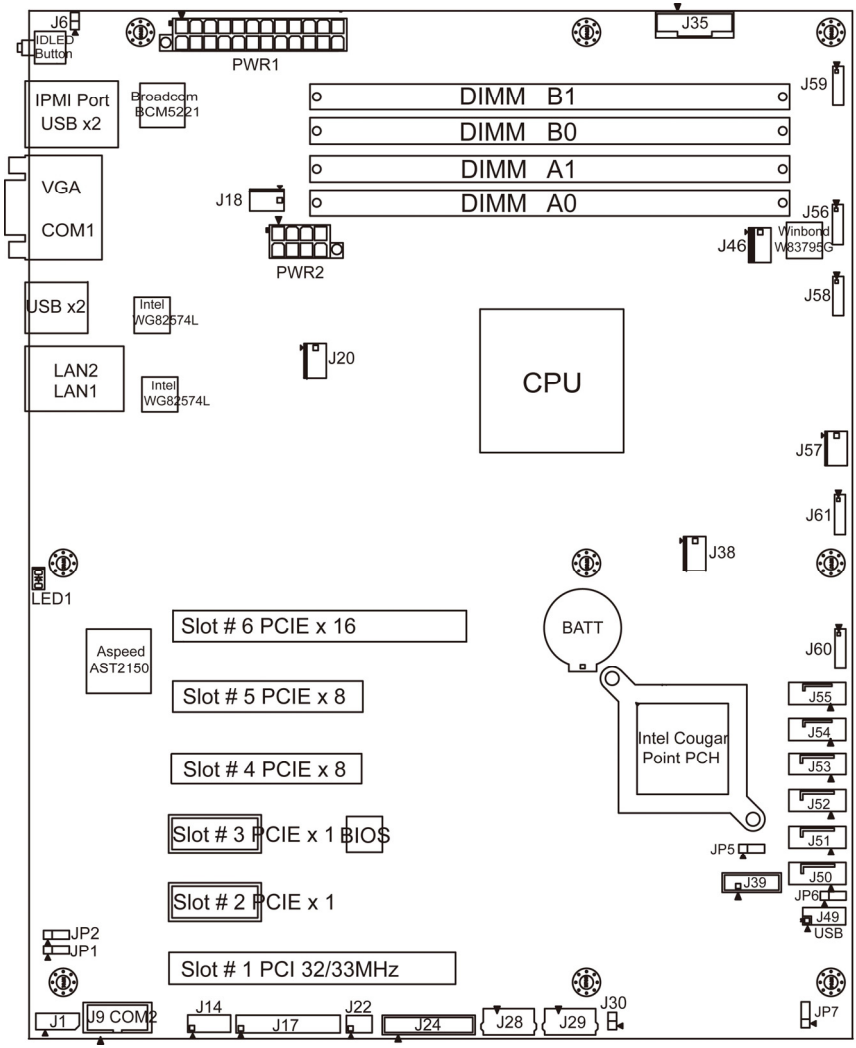
This diagram is representative of the latest motherboard revision available at the time of publishing. The board you receive may not look exactly like the above diagram.

2.2 - Block Diagram



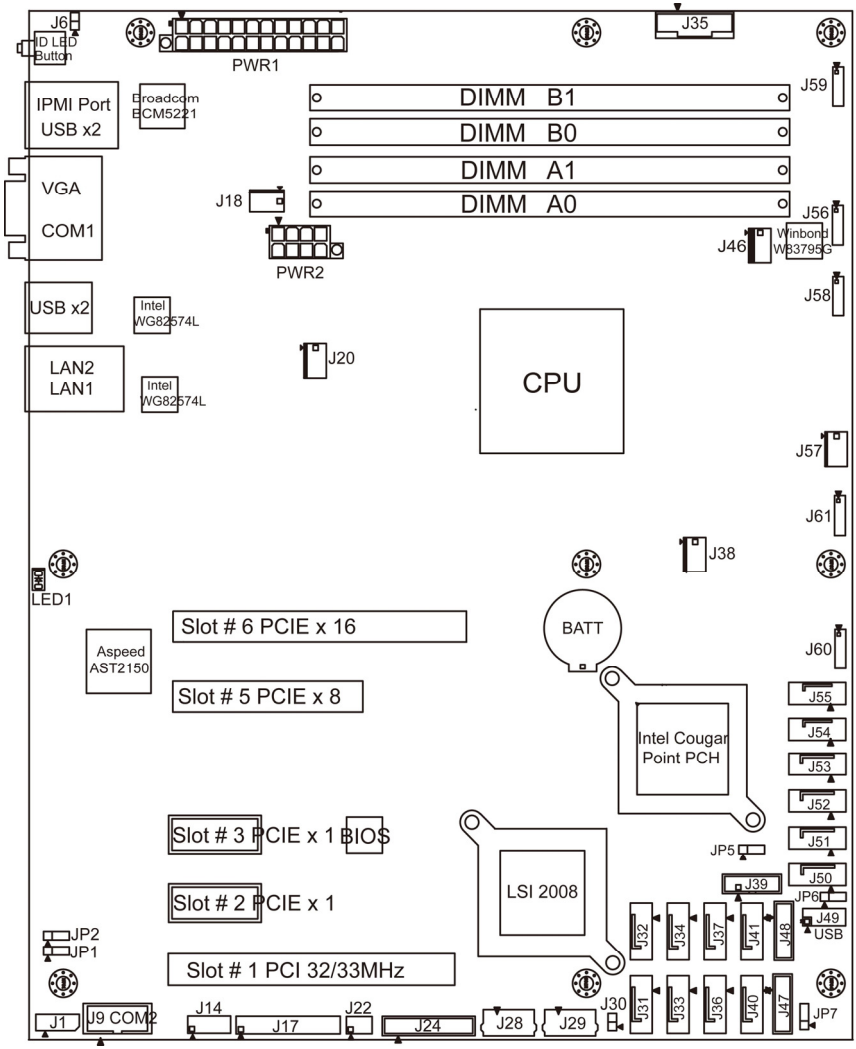
S5512

2.3 - Board Parts, Jumpers and Connectors

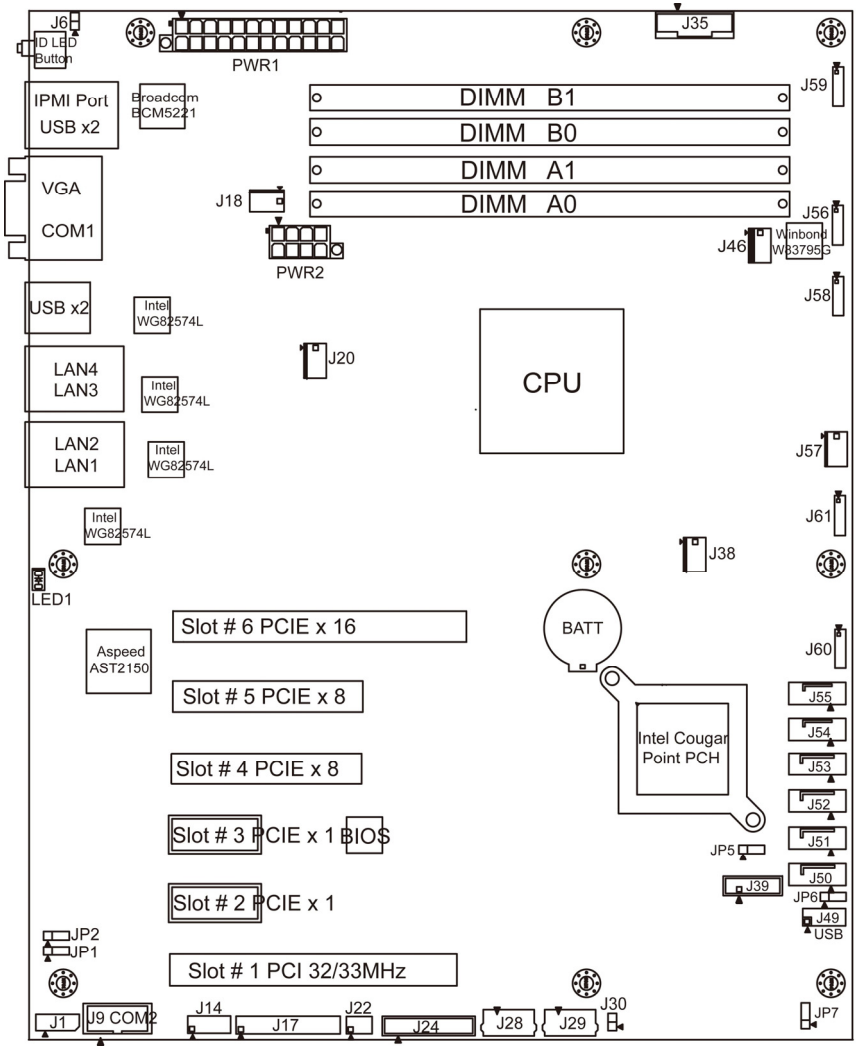


S5512GM2NR

1. ▲in the image indicates pin 1.



S5512WGM2NR


J6
ID LED
Button
PWR1
J35
J59
IPMI Port
USB x2
Broadcom
BCM5221
DIMM B1
DIMM B0
DIMM A1
DIMM A0
VGA
COM1
J18
PWR2
J56
J46
Winbond
W83795G
J58
USB x2
Intel
WG82574L
J20
CPU
LAN4
LAN3
LAN2
LAN1
J57
J61
J38
LED1
Slot # 6 PCIE x 16
Aspeed
AST2150
BATT
J60
Slot # 5 PCIE x 8
Intel Cougar
Point PCH
J55
J54
J53
J52
Slot # 4 PCIE x 8
J51
JP5
Slot # 3 PCIE x 1
BIOS
J50
J39
JP6
J49
USB
Slot # 2 PCIE x 1
JP2
JP1
Slot # 1 PCI 32/33MHz
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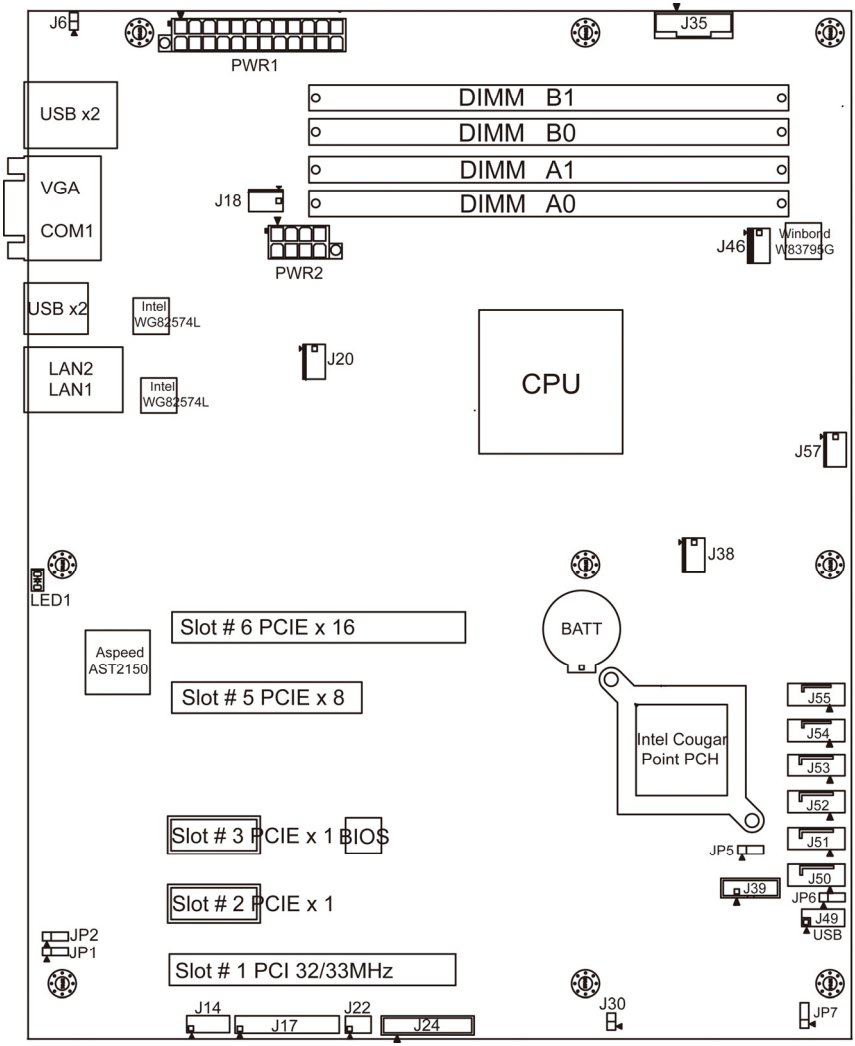
J9 COM2
J14
J17
J22
J24
J28
J29
J30
JP7

S5512GM4NR



S5512G2NR-LE

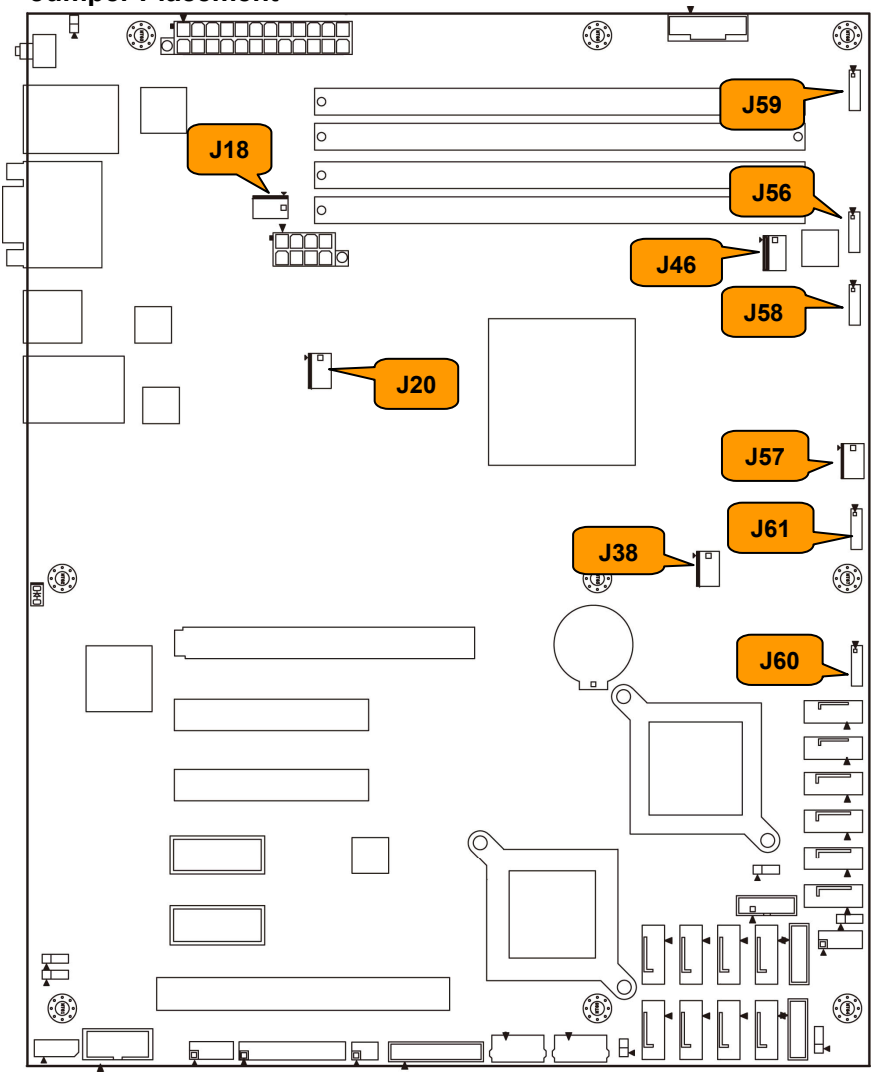
Jumpers & Connectors

Jumper/Connector	Function
J56/J58/J59/J60/J61	8-Pin Fan Header (For Barebone) (S5512WGM2NR/S5512GM2NR/S5512GM4NR)
J18/J20/J38/J46/J57	4-Pin Fan Connector
J1	IPMB Connector (S5512WGM2NR/S5512GM2NR/S5512GM4NR)
J6	Front Panel IDLED Switch 2 Pin Header
J9	COM2 Header (S5512WGM2NR/S5512GM2NR/S5512GM4NR)
J14/J49	Dual USB2.0 Header
J17	Front Panel Header
J22	LAN ACTIVE LED Header
J24	Fan Front Header
J28/J29	USB 2.0 Type-A Connector (S5512WGM2NR/S5512GM2NR/S5512GM4NR)
J30	Intrusion Switch 2Pin Headers
J35	PSMI Connector
J39	SGPIO Header
J47/J48	SGPIO Header (S5512WGM2NR/S5512GM2NR/S5512GM4NR)
J31/J32/J33/J34	SAS (Port7/Port3/Port6/Port2)
J36/J37/J40/J41	SAS (Port5/Port1/Port4/Port0)
J50/J51/J52/J53	SATA(Port5/Port4/Port3/Port2)
J54/J55	SATA(Port1/Port0)
JP5	ME recovery function set
JP6	RTC Clear CMOS set
JP7	ME update function set

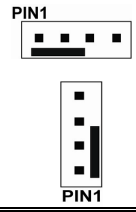
Jumper Legend

	OPEN - Jumper OFF	Without jumper cover
	CLOSED - Jumper ON	With jumper cover

Jumper Placement



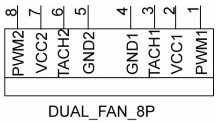
J18/J20/J38/J46/J57: 4-Pin FAN Connector



Pin	1	2	3	4
Signal	GND	VCC	Tachometer	PWM

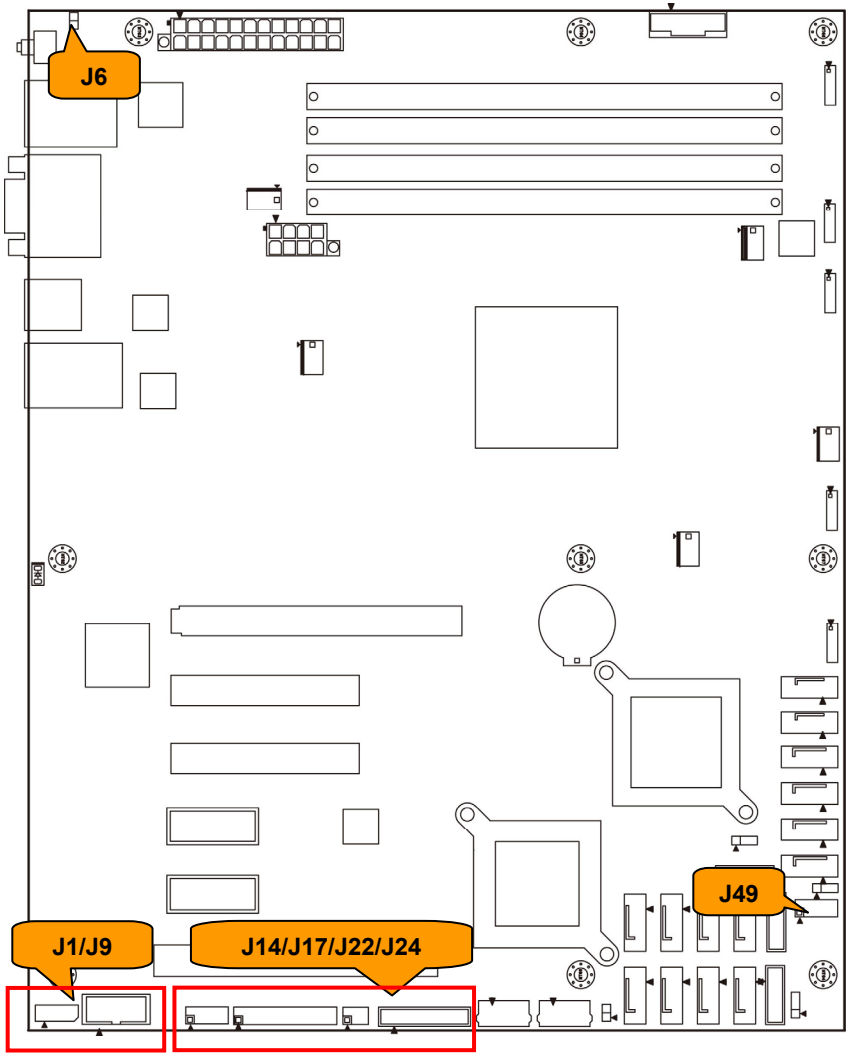
NOTE:
Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable.

J56/J58/J59/J60/J61: 8-Pin FAN Connector



Pin	Signal
1	PWM1
2	VCC1
3	Tachometer1
4	GND1
5	GND2
6	Tachometer2
7	VCC2
8	PWM2

NOTE:
Do not mix 8-pin Fan headers with 4-pin Fan headers. Mixing these fan headers will cause problems to the system. These connectors are only for the barebone.



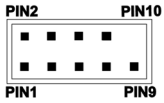
J1: IPMB Connector

	Pin	1	2	3	4
PIN1	**Signal**	IPMB DATA	GND	IPMB CLK	NC

J6: Front Panel IDLED Switch2 Pin Header

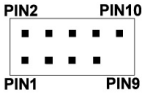
Pin	1	2
Signal	FP IDLED Switch	FP IDLED Switch (GND)

J9: COM2 Header



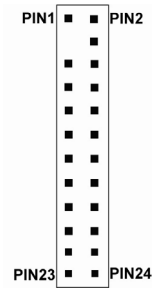
Pin	Signal	Pin	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	KEY

J14：Dual USB2.0 Header (Port4/Port5)
J49：Dual USB2.0 Header (Port2/Port3)



Pin	Signal	Pin	Signal
1	USB 5V Power	2	USB 5V Power
3	USB Data-	4	USB Data-
5	USB Data+	6	USB Data+
7	GND	8	GND
9	KEY	10	NC

J17: Front Panel Header

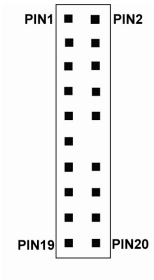


Pin	Signal	Pin	Signal
1	PWRLED+	2	FP Power (3.3V)
3	KEY	4	ID_LED+
5	PWRLED-(GND)	6	ID_LED-(GND)
7	HD_LED+	8	Fault LED1-
9	HD_LED-	10	Fault LED2-
11	Power Switch+	12	LAN1_ACTIVE_LED+
13	GND	14	LAN1_ACTIVE_LED-
15	Reset Switch+	16	SMB_DATA
17	GND	18	SMB_CLK
19	ID Switch+	20	INTRUSION#
21	TBMP Sensor	22	LAN2_ACTIVE_LED+
23	NMI Switch#	24	LAN2_ACTIVE_LED-

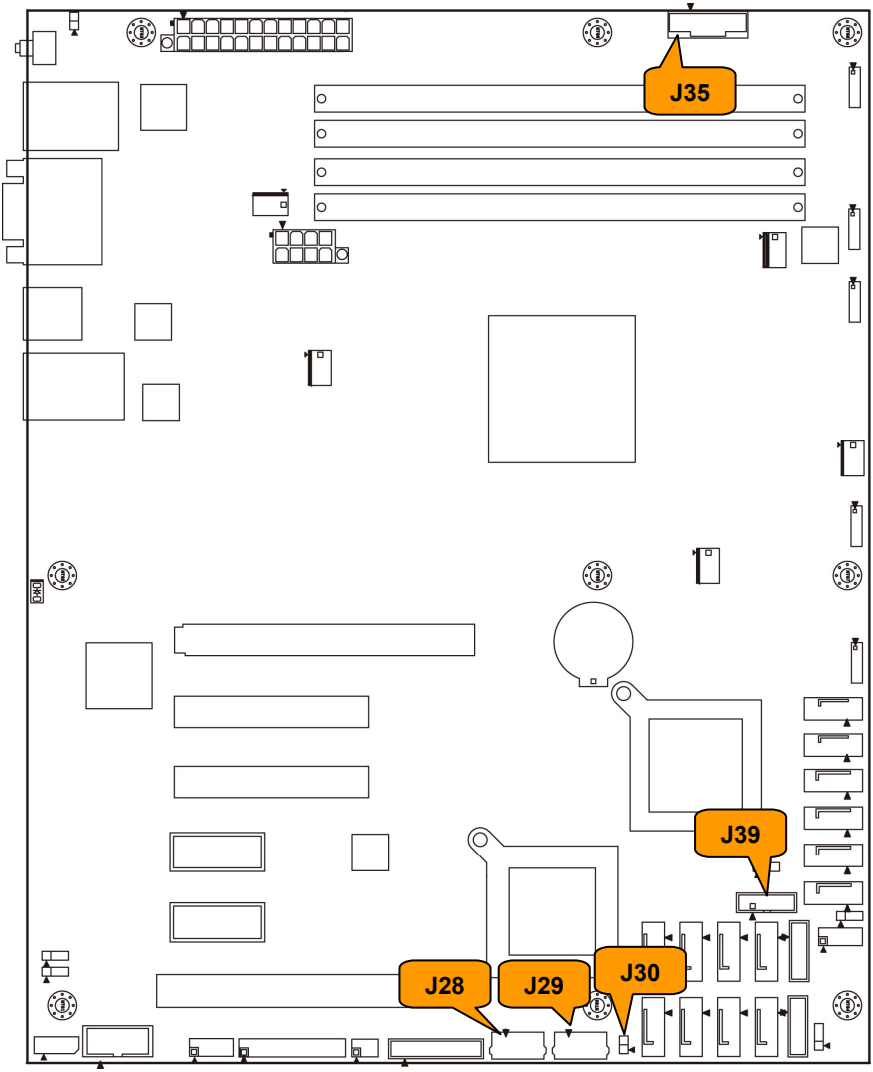
J22: LAN ACTIVE LED Header

Pin	Signal
1	LAN3_ACTIVE_LED +
2	LAN3_ACTIVE_LED-(GND)

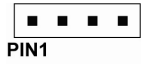
J24: FAN Front Header



Pin	Signal	Pin	Signal
1	SYSFAN_TACH1	2	SYSFAN_TACH6
3	SYSFAN_TACH2	4	SYSFAN_TACH7
5	SYSFAN_TACH3	6	SYSFAN_TACH8
7	SYSFAN_TACH4	8	SYSFAN_TACH9
9	SYSFAN_TACH5	10	SYSFAN_TACH10
11	GND	12	KEY
13	SYSFAN_PWM5	14	SYSFAN_PWM4
15	NC	16	SMB_FRU_SDA
17	NC	18	SMB_FRU_SCL
19	V3AUX	20	SYSFAN_PWM6


J35
J39
J28
J29
J30

J28/J29： USB 2.0 Type-A Connector

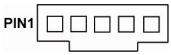


Pin	1	2	3	4
Signal	USB 5V power	USB Data-	USB Data+	GND

J30: Intrusion Switch 2Pin Headers

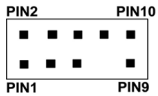
Pin	Signal
1	INTRUSION switch
2	INTRUSION switch(GND)

J35: PSMI Connector

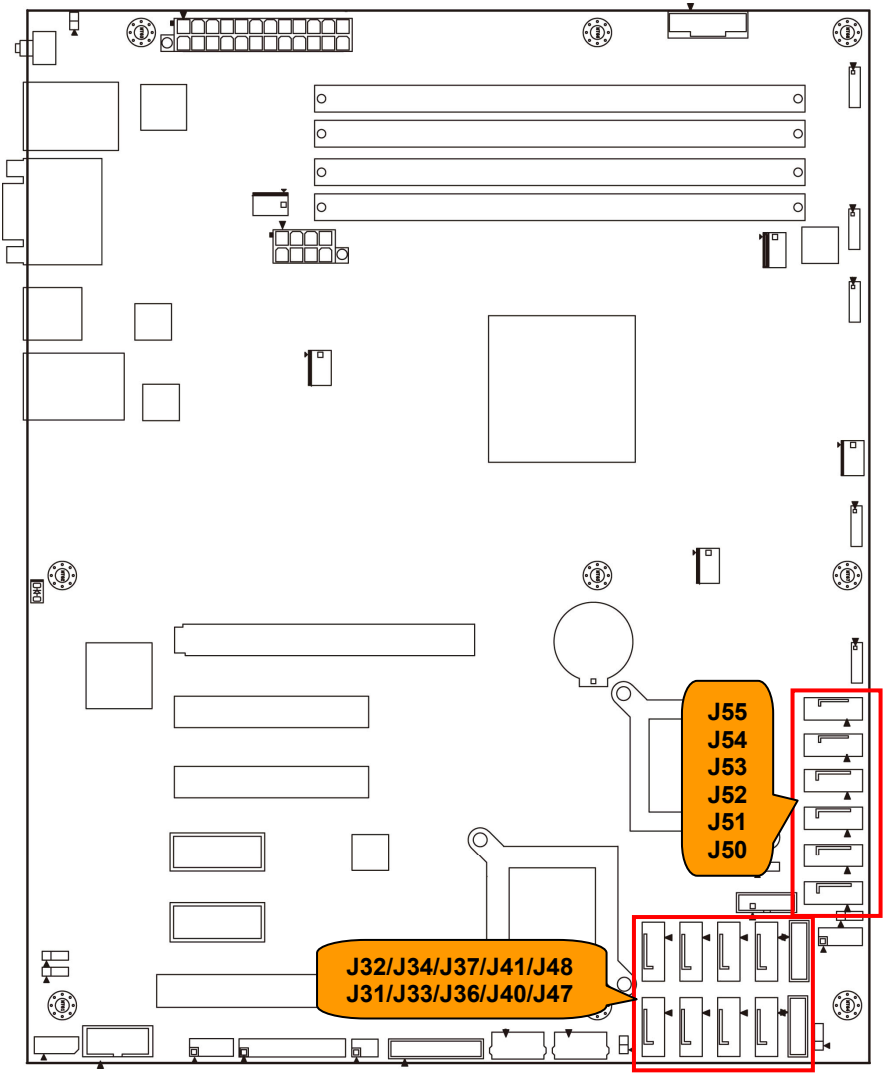


Pin	1	2	3	4	5
Signal	PSMI Clock	PSMI Data	PSU Alert#	GND	3.3V Standby

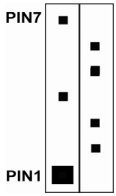
J39/J47/J48: SGPIO Header



Pin	Signal	Pin	Signal
1	SMB SCL	2	SGPIO Data0
3	SMB SDA	4	SGPIO Data1
5	GND	6	SGPIO LOAD
7	KEY	8	SGPIO Clock
9	3.3V standby	10	BP HDD FAULT


J55
J54
J53
J52
J51
J50
J32/J34/J37/J41/J48
J31/J33/J36/J40/J47

J31/J32/J33/J34/J36/J37/J40/J41: SAS Connector

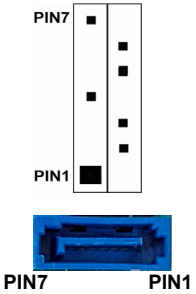


7	GND
6	SATA RX DP
5	SATA RX DN
4	GND
3	SATA TX DN
2	SATA TX DP
1	GND

Connects to the SCSI SATA ready drives via the SCSI SATA cable.

SAS0: **J41** SAS1: **J37**
SAS2: **J34** SAS3: **J32**
SAS4: **J40** SAS5: **J36**
SAS6: **J33** SAS7: **J31**

J50/J51/J52/J53/J54/J55: SATA Connector



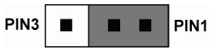
7	GND
6	SATA RX DP
5	SATA RX DN
4	GND
3	SATA TX DN
2	SATA TX DP
1	GND

Connects to the Serial ATA ready drives via the Serial ATA cable.

SATA0: J55 SATA1: J54
Support to SATAIII

SATA2: J53 SATA3: J52
SATA4: J51 SATA5: J50
Support to SATAII

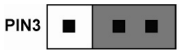
JP5： ME recovery function set

	**Pin1-Pin2： NORMAL (Default)**
	Pin2-Pin3: CLOSE (ME force update)

JP6：RTC Clear CMOS set

 Normal (Default)	**You can reset the CMOS settings by using this jumper if you have forgotten your system/setup password or need to clear system BIOS setting.** - **1.Power off system and disconnect both power connectors from the motherboard** - **2.Put jumper cap back to Pin_1 and Pin_2 (default setting)** - **3.Use jumper cap to close Pin_2 and Pin_3 for several seconds to Clear CMOS** - **4.Reconnect power & power on system**
 Clear CMOS	

JP7：ME update function set

	**Pin1-Pin2： NORMAL (Default)**
	Pin2-Pin3: CLOSE (ME update function)

Onboard ID LED

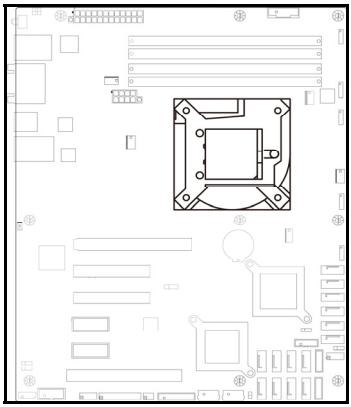
Pin	Signal	
+	V3AUX	
-	GND	
State	**Color**	**Description**
On	Blue	System identified
Off	Off	System not identified

Note:

You can identify the specific system using this LED. Users from remote site could also activate ID LED by input a few commands in IPMI, detailed software support please visit http://www.tyan.com for lastest AST2150 user guide.

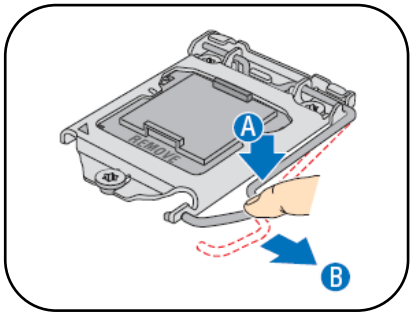
2.4 - Installing the Processor

Your brand new S5512, Only Intel® "Sandy-Bridge-DT series" processors are certified and supported with this motherboard. Check our website for latest processor support. **http://www.tyan.com**
NOTE: TYAN® is not liable for damage as a result of operating an unsupported configuration.
Locate the CPU socket (LGA1155) on the motherboard:

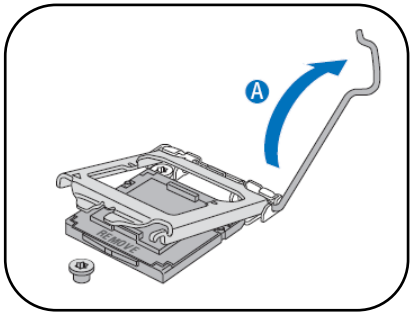


To install a CPU:

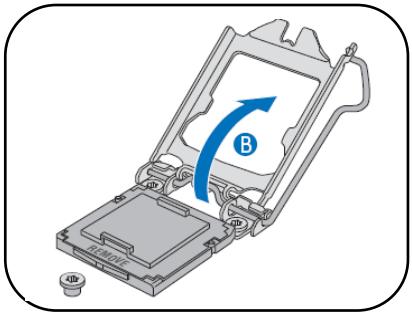
1. Press the load lever with your thumb (A),and then move it to the right(B)until it is released from the retention tab.



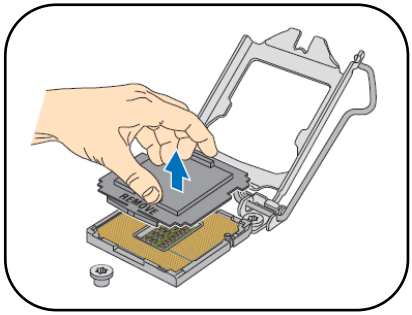
2. Lift the load lever in the direction of the arrow until the load plate is completely lifted.
   (A) ------load lever
   (B) ------load plate



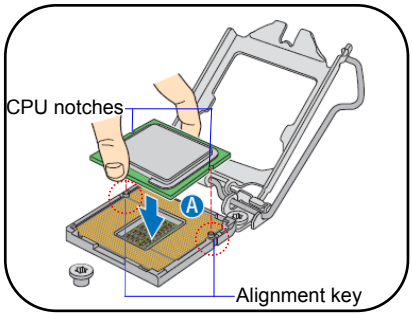
3. Please refer to the image.



4. Remove the PnP cap from the CPU socket.

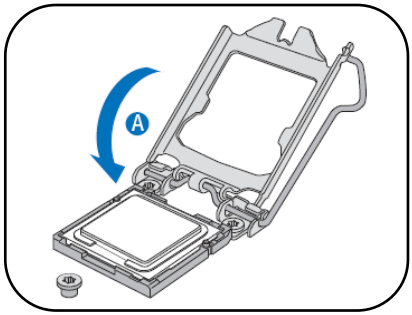


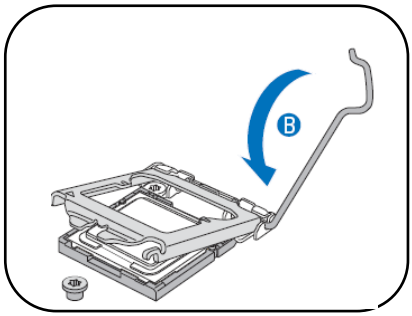
5. Position the CPU over the socket, ensuring that the gold triangle is on the bottom-left corner of the socket, and then fit the socket alignment keys into the CPU notches.



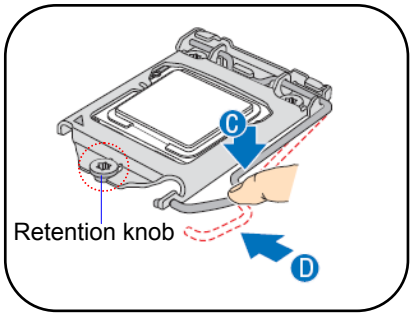
The CPU fits in only one correct orientation. Do not force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU.

6. Close the load plate(A), and then push down the load lever(B) ensuring that the front edge of the load plate slides under the retention knob





7. Insert the load lever under the retention tab.



For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by Intel®.
Please refer to Intel®s website at www.Intel.com

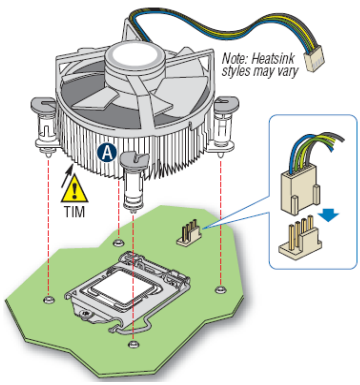
2.5 - Installing the Heatsink

Heatsink Installation

After installing the processor, you should proceed to install the heat sink. The CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to the motherboard.

For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by Intel®. Please refer to Intel' ®s website at www.Intel.com.

The following diagram illustrates how to install heat sink onto the CPU of S5512.



2U Reference Heatsink Assembly

1. If a protective film covers the thermal interface material (TIM) on the underside of the heatsink, remove the protective film.

2. Align heatsink fins to the front and back of the chassis for correct airflow. Airflow goes from front-to-back of chassis.

3. Each heatsink has four captive fasteners and should be tightened as shown

4. Using a #2 Phillips* screwdriver, finger-tighten each fastener diagonally, according to the white-circled numbers.

5. Securely re-tighten each fastener again in the same order as performed in Step 4.

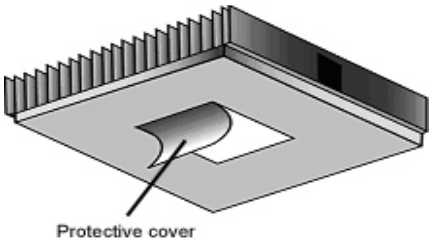
6. Attach fan power cable to server board as shown.

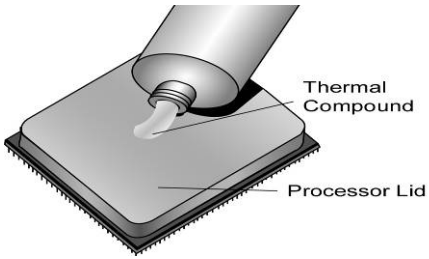
7. Reinstall and reconnect any parts you removed or disconnected to reach the processor sockets.

8. Replace the server's cover and reconnect the AC power cord. Refer to the documentation that came with your server chassis for instructions on installing the server's cover.

CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to the motherboard.

2.6 - Thermal Interface Material





There are two types of thermal interface materials designed for use with the processors.

The most common material comes as a small pad attached to the heat sink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material. Simply remove the protective cover and place the heat sink on the processor.

The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

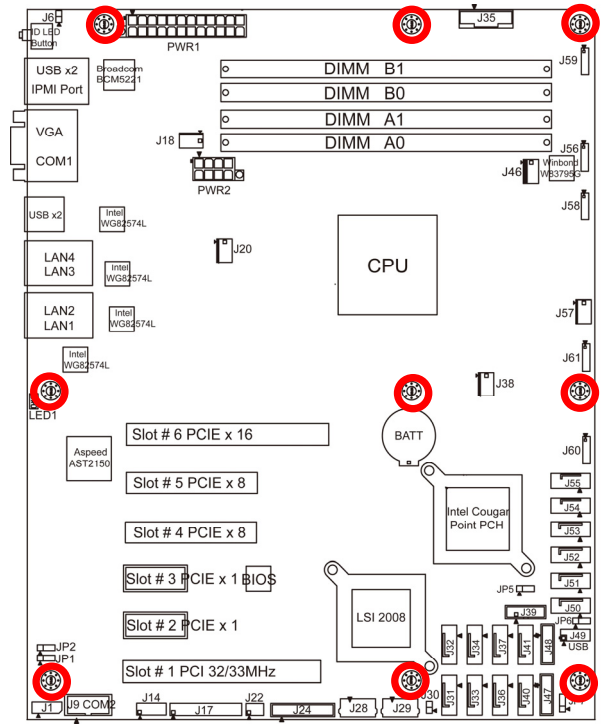
Always check with the manufacturer of the heat sink & processor to ensure the thermal Interface material is compatible with the processor and meets the manufacturer's warranty requirements.

2.7 - Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs.

Screw holes

If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case.
Place 9 screws into the holes indicated by circles to secure the mother board to the chassis.

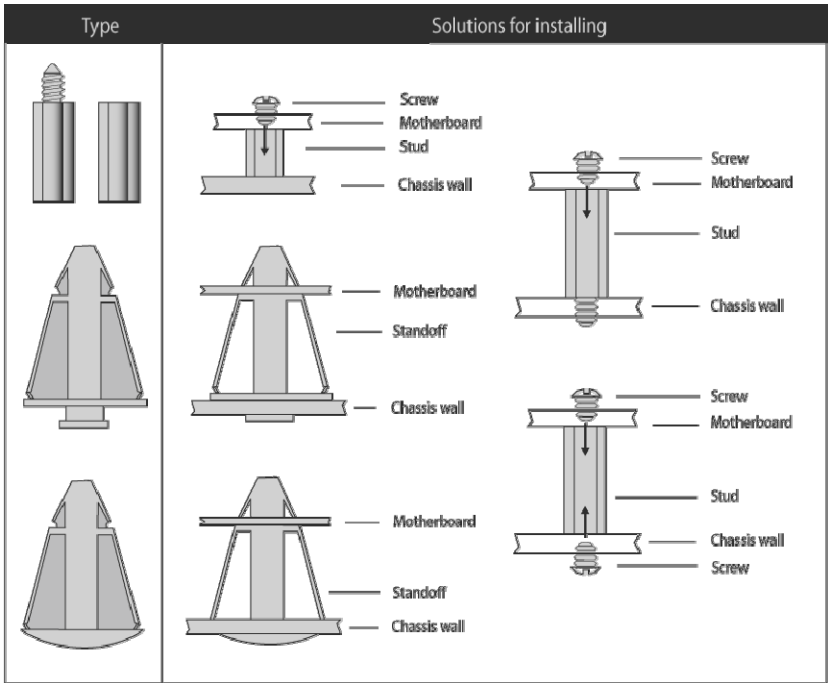


DO NOT overtighten the screws! Doing so can damage the motherboard.

Some chassis' include plastic studs instead of metal. Although the plastic studs are usable, TYAN® recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

Mounting the Motherboard

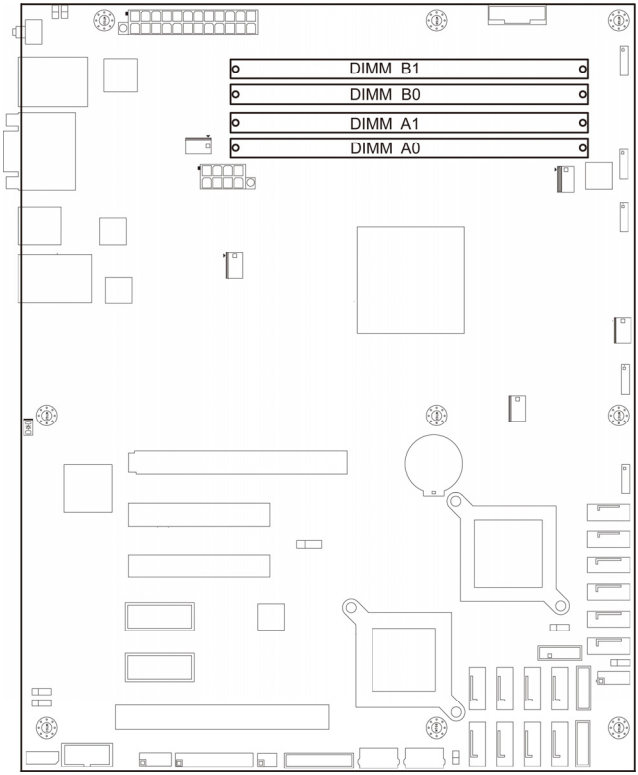


2.8 - Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor.

Overview

The motherboard comes with four Double Data Rate 3（DDR3）Dual Inline Memory Modules （DIMM）sockets.
The figure illustrate the location of the DDR3 DIMM socket.



- TYAN® S5512 series support up to 32GB of unbuffered (UDIMM) DDR3 ECC **1333/1066 MHz** in 4 memory slot.
- All installed memory will automatically be detected and no jumpers or settings need changing.
- All memory must be of the same type and density.
- Always populate the memory starting from DIMM A0 first.

Check the TYAN® Web site at: **www.TYAN.com** for details of the type of memory recommended for your motherboard.

Refer to the memory population option table for recommended memory installation instruction.

Recommended Memory Population Table

To achieve the best performance, TYAN® strongly recommended memory installation configuration as listed below:

S5512UDIMM population		One DIMM per Channel		Two DIMM per Channel	
Single Rank Memory	DIMM B1 (J32)		X	X	
	DIMM B0 (J31)	X		X	
	DIMM A1 (J30)		X	X	
	DIMM A0 (J29)	X		X	
Dual Rank Memory	DIMM B1 (J32)		X	X	
	DIMM B0 (J31)	X		X	
	DIMM A1 (J30)		X	X	
	DIMM A0 (J29)	X		X	

NOTE:
Max Memory Combination
Single Rank Unbuffered DIMMs ECC
16GB(4x4GB DIMMs)
Dual Rank Unbuffered DIMMs ECC
32GB(4x8GB DIMMs)
"X" indicates a populated DIMM slot.

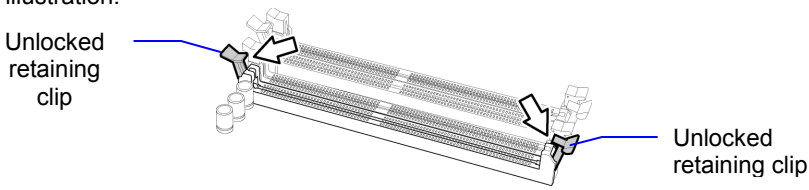
Intel® Xeon® Processor E3-1200 Memory Support* table		
Intel® C202 Chipset (Cougar Point Essential Server) & C204 Chipset (Cougar Point Standard Server)		
DIMM Configuration		
UDIMM Non-ECC	UDIMM ECC	UDIMM Mix ECC with Non-ECC
Platform		
Intel® Xeon® processor E3-1200 product family		
Not Supported	Supported	Not Supported
Intel® CoreTM i3 processor series		
Not Supported	Supported	Not Supported
Intel® CoreTM i5-2400/2500 and i7-2600 processor series		
Not Supported	Not Supported	Not Supported

Memory Installation Procedure

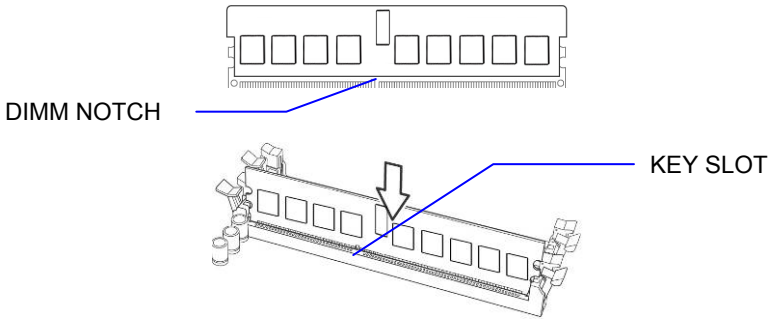
Ensure to unplug the power supply before adding or removing DIMMs or other system components, Failure to do so may cause severe damage to both the motherboard and the components.

Follow these instructions to install memory modules into the S5512.

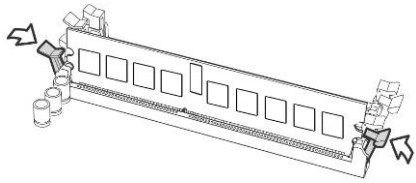
1. Unlock a DIMM socket by Press the retaining clip outwardly in the following illustration.



2. Align the memory module with the socket，such that the DIMM NOTCH match the KEY SLOT on the socket.



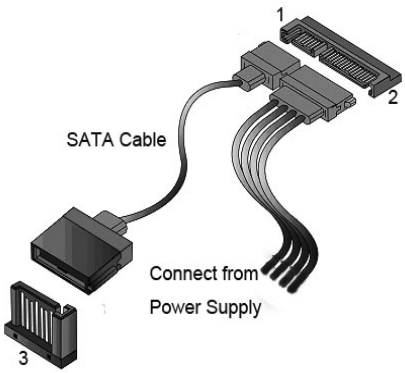
3. Hold the DIMM by both of its ends . Insert the module vertically into the socket . Apply force to both ends of the DIMM simultaneously until the retaining clip pop up into place. And the DIMM cannot be pushed in any further to ensure proper sitting of the DIMM。



2.9 - Attaching Drive Cables

Attaching Serial ATA Cables
S5512 is equipped with **6** Serial ATA (SATA) channels. Connections for the drives are very simple.
There is no need to set Master/Slave jumpers on SATA drives.
If you are in need of SATA/SAS cables or power adapters please contact your place of purchase.

The following pictures illustrate how to connect an SATA drive



1. SATA drive cable connection

2. SATA drive power connection

3. SATA cable motherboard connector

2.10 - Installing Add-In Cards

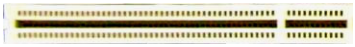
Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the slots that may appear on your motherboard.

PCI-E x 16 slot (w/x8 link) x1

PCI-E x 8 slot (w/x4 link/ w/x8 link) x2

PCI-E x 1 slot x2

PCI 32bit slot x1



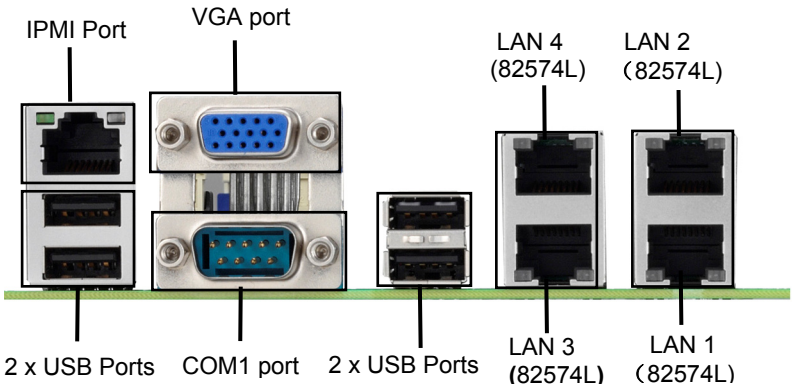
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

TIP: It's good practice to install add-in cards in a staggered manner rather than making them directly adjacent to each other. Doing so allows air to circulate within the chassis more easily, thus improving cooling for all installed devices.

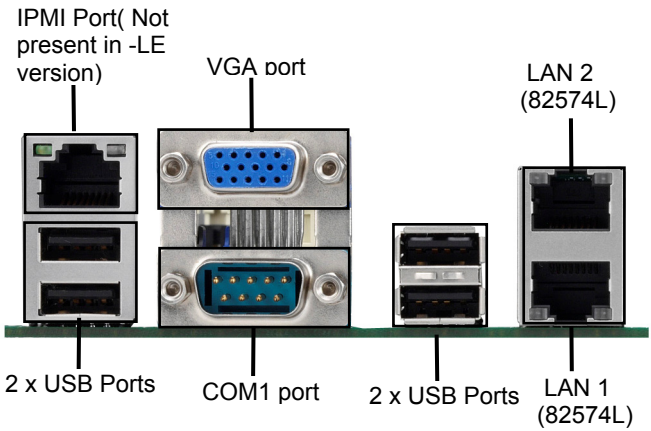
YOU MUST ALWAYS unplug the power connector to the motherboard before performing system hardware changes to avoid damaging the board or expansion device.

2.11 - Connecting External Devices

Your motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.



Only for S5512GM4NR



Only for S5512WGM2NR/ S5512GM2NR/S5512G2NR-LE

Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

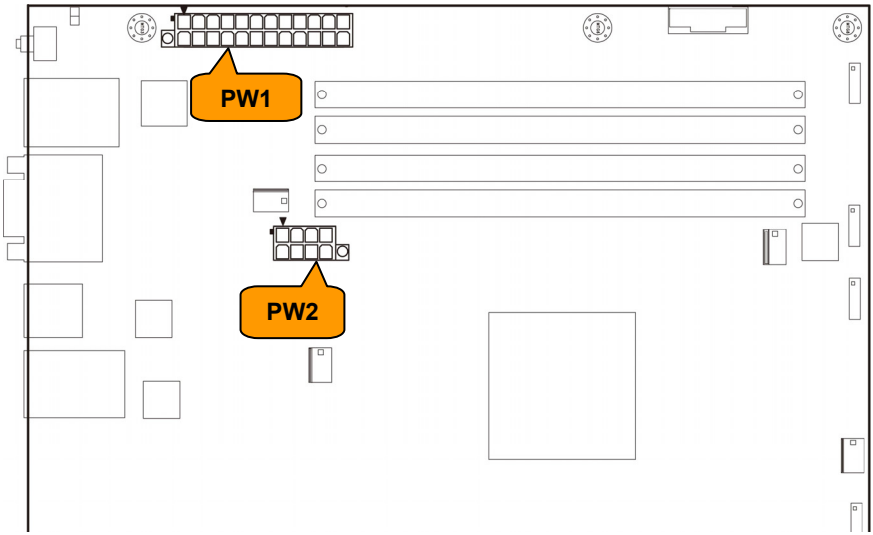
Onboard LAN LED Color Definition

The four onboard Ethernet ports have green and Amber LEDs to indicate LAN status. The chart below illustrates the different LED states.

10/100/1000 Mbps LAN Link/Activity LED Scheme			
		Left LED	**Right LED**
10 Mbps	**Link**	Green	Off
	Active	Blinking Green	Off
100 Mbps	**Link**	Green	Green
	Active	Blinking Green	Green
1000 Mbps	**Link**	Green	Amber
	Active	Blinking Green	Amber

2.12 - Installing the Power Supply

There are **two** power connectors on your S5512. It is required that you have an EPS12V power supply which has one 24-pin and one 8-pin connectors.



PWR1: 24-Pin 12V main PWR Connector (Input)

Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	GND	4	+5V
5	GND	6	+5V
7	GND	8	PWR OK
9	5VSB	10	+12V
11	+12V	12	+3.3V
13	+3.3V	14	-12V
15	GND	16	PS_ON#
17	GND	18	GND
19	GND	20	Reserve
21	+5V	22	+5V
23	+5V	24	GND

PWR 2: 8-Pin PWR Connector

Pin	Signal	Pin	Signal
1	GND	2	GND
3	GND	4	GND
5	+12V	6	+12V
7	+12V	8	+12V

Apply power to the motherboard:

1.Connect to the EPS12V 8 pin Power Connector
2.Connect to the EPS12V 24 pin Power Connector
3.Connect power cable to Power Supply and power outlet.
Look to the **www.TYAN.com** website for further information.

YOU MUST unplug the power supply before plugging the power cables to motherboard connectors.

2.13 - Finishing Up

Congratulations on making it this far! You're finished setting up the hardware aspects of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially power cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly. In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

Chapter 3: BIOS Setup

3.1 - About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:

1. Turn on or reboot your system.
2. Press <Del> during POST (<Tab> on remote console) to start the BIOS setup utility.

3.2 - Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
<F1>	General help window
<ESC>	Exit current menu
← → arrow keys	Select a different menu
↑ or ↓ arrow keys	Move cursor up/down
<Tab> / <Shift-Tab>	Cycle cursor up/down
<Home> / <End>	Move cursor to top/bottom of the window
<PgUp> / <PgDn>	Move cursor to next/previous page
<->	Select the previous value/setting of the field
<+>	Select the next value/setting of the field
<F8>	Load Fail Safe default configuration values of the menu
<F3>	Load the Optimal default configuration values of the menu
<F4>	Save and exit
<Enter>	Execute command or select submenu
<Del> 、<F2>	Into BIOS setup menu
<F11>	BBS POPUP
<F12>	Boot from the network

3.3 - Getting Help

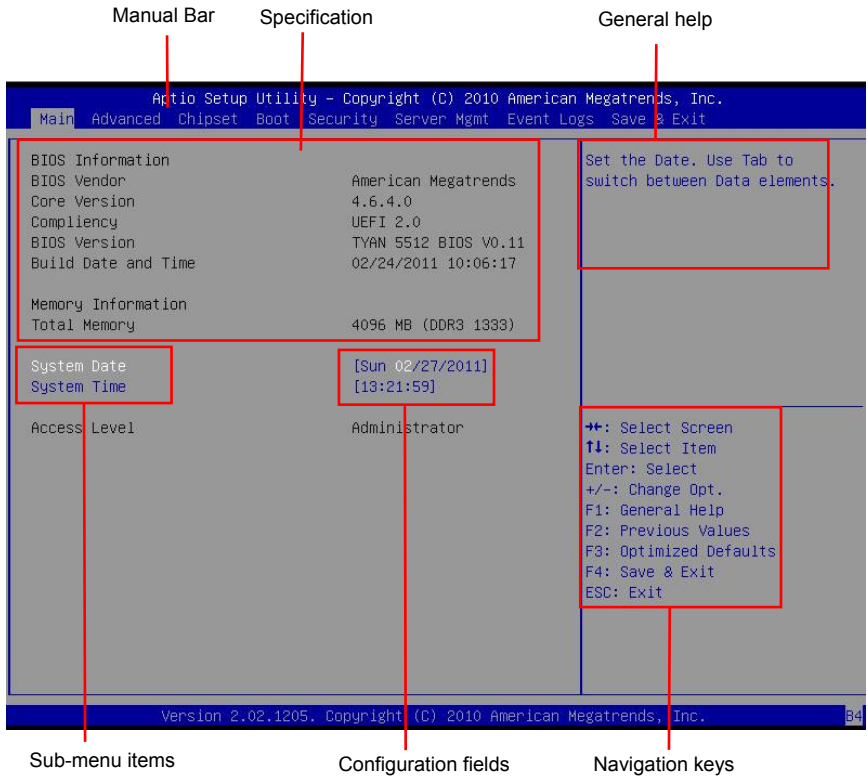
Pressing [**F1**] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**].

3.4 - In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS. The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by TYAN® or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated when this manual is written. Please visit TYAN®'s website at http://www.TYAN.com for the information of BIOS updating.

3.5 - BIOS Main Menu


Manual Bar
Specification
General help
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.4.0
Compliency UEFI 2.0
BIOS Version TYAN 5512 BIOS V0.11
Build Date and Time 02/24/2011 10:06:17
Memory Information
Total Memory 4096 MB (DDR3 1333)
System Date [Sun 02/27/2011]
System Time [13:21:59]
Access Level Administrator
Set the Date. Use Tab to switch between Data elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.
Sub-menu items
Configuration fields
Navigation keys

BIOS Information
Displays BIOS related information.

Memory Information
Displays total memory size.

System Date (Day mm/dd/yyyy)
System Time (hh:mm:ss)

Allow user to set system time and date.
The Time is displayed in 24 hours format.

The Date can be set from January 1st, 2005 to December 31, 2099
The values set in these two fields take effect immediately.

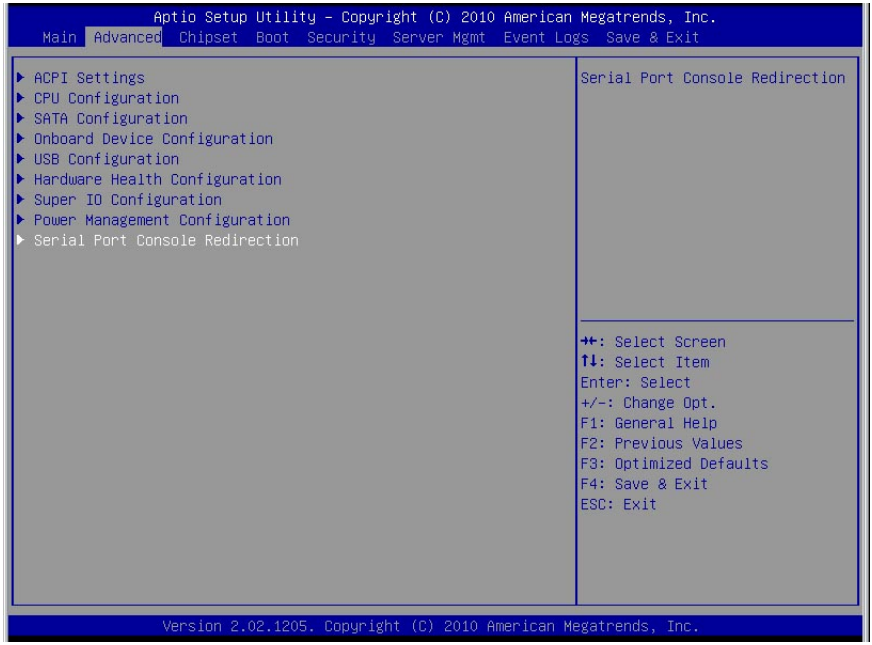
3.5.1 Manual Bars

Main	**For changing the basic system configuration**
Advanced	**For changing the advanced system settings**
Chipset	**For customize the Intel chipset function**
Boot	**For changing the system boot configuration**
Security	**For setting the Supervisor and User passwords**
Server Mgmt	**For changing the server management**
Event Logs	**For record the system Event Logs**
Save & Exit	**For selecting the exit options and loading default settings**

The Main BIOS Menu is the first screen that you can navigate which has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured, options in blue can be changed. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often, a text message will accompany with it.

3.6 - BIOS Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



ACPI Settings

Selection for Advanced ACPI Configuration.

CPU Configuration

Configure CPU

SATA Configuration

This menu helps you to set up or change the SATA Configuration.

Onboard Device Configuration

Configure Onboard Devices

USB Configuration

Configure the USB support

Hardware Health Configuration

IPMI configuration including server monitoring and event log

Super IO Configuration

Configures Super IO

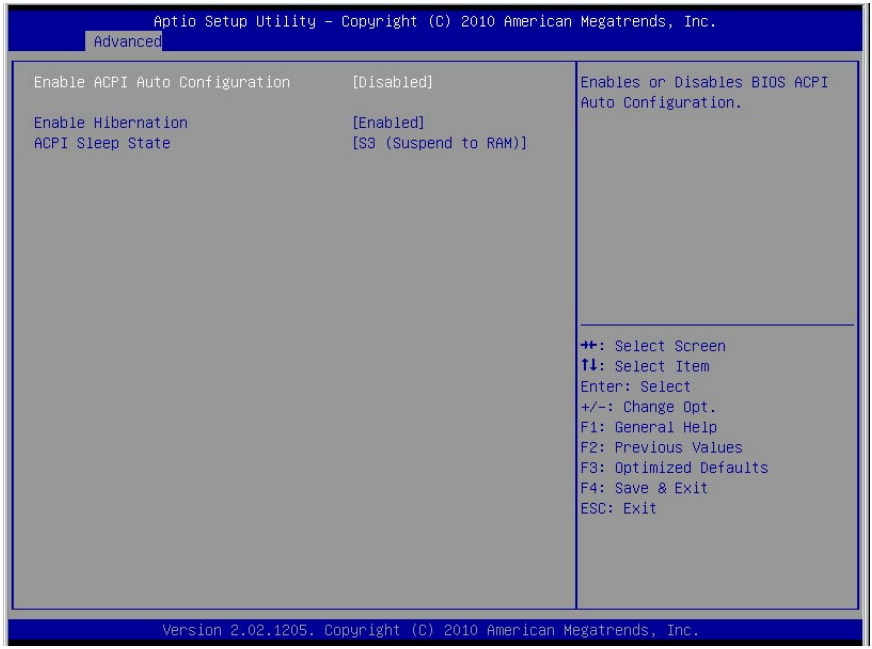
Power Management Configuration

Configure the Power Management

Serial Port Console Redirection

Redirect Serial Port Console

3.6.1 - ACPI Setting



Enable ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto Configuration
[Disabled] / [Enabled]
Default is [Disabled]

Enable Hibernation

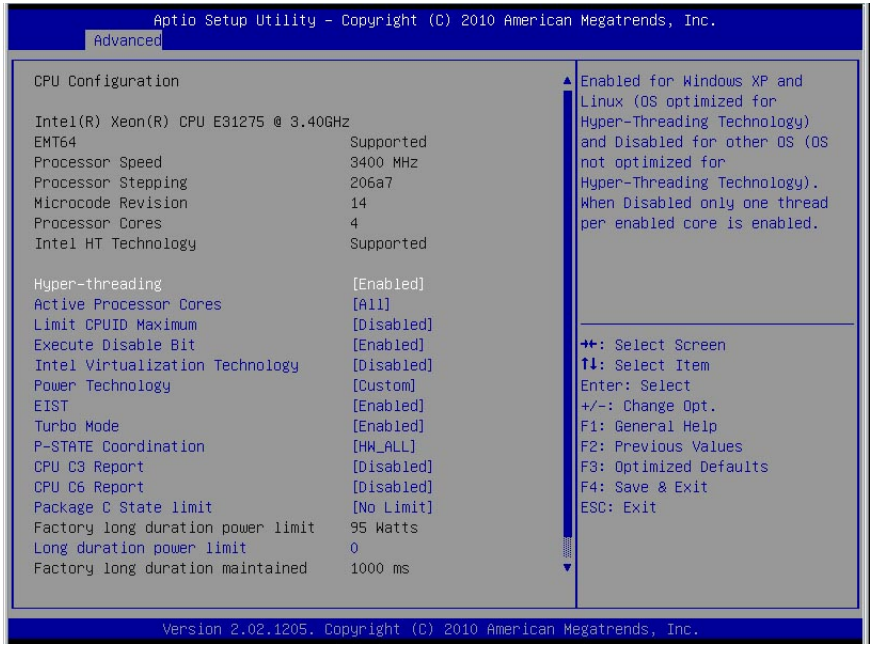
[Disabled] / [Enabled]
Default is [Enabled]

ACPI Sleep State

[S3 (Suspend to RAM] / [S1 (CPU Stop Clock)]/ [S3 (Suspend to RAM)]
Default is [S3 (Suspend to RAM)]

3.6.2 - CPU Configuration

This section allows you to fine-tune the processor options.


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Advanced
CPU Configuration
Intel(R) Xeon(R) CPU E31275 @ 3.40GHz
EMT64 Supported
Processor Speed 3400 MHz
Processor Stepping 206a7
Microcode Revision 14
Processor Cores 4
Intel HT Technology Supported
Hyper-threading [Enabled]
Active Processor Cores [All]
Limit CPUID Maximum [Disabled]
Execute Disable Bit [Enabled]
Intel Virtualization Technology [Disabled]
Power Technology [Custom]
EIST [Enabled]
Turbo Mode [Enabled]
P-STATE Coordination [HW_ALL]
CPU C3 Report [Disabled]
CPU C6 Report [Disabled]
Package C State limit [No Limit]
Factory long duration power limit 95 Watts
Long duration power limit 0
Factory long duration maintained 1000 ms
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Hyper- threading

This option enable for Windows XP and Linux (OS optimized for Hyper- threading Technology.
And Disabled for other (OS not optimized for Hyper-threading Technology).
[Disabled] / [Enabled]
Default is [Enabled]

Active Processor Cores

[All] / [Enabled]
Default is [All]

Limit CPUID Maximum

[Disabled] / [Enabled]
Default is [Disabled]

Execute Disable Bit

[Disabled] / [Enabled]
Default is [Enabled]

Intel Virtualization Technology

[Disabled] / [Enabled]
Default is [Disabled]

Power Technology

[Custom] / [Disable]
Default is [Custom]

EIST

[Disabled] / [Enabled]
Default is [Enabled]

Turbo Mode

[Disabled] / [Enabled]
Default is [Enabled]

P-STATE Coordination

[HW_ALL]/ [Disabled]
Default is [HW_ALL]

CPU C3 Report

[Disabled] / [Enabled]
Default is [Disabled]

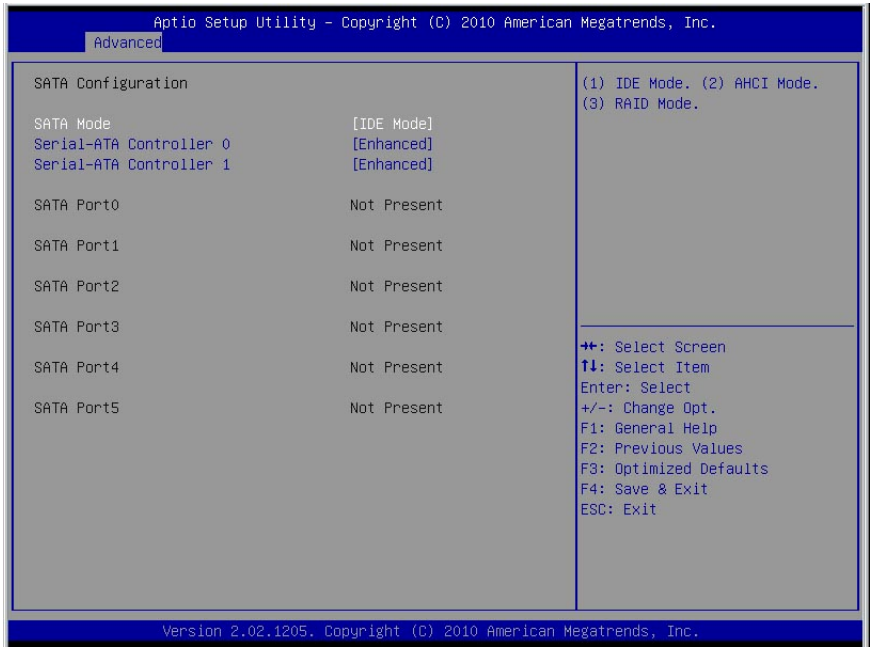
CPU C6 Report

[Disabled] / [Enabled]
Default is [Disabled]

Package C State Limit

[C0]/ [C1]/ [C6]/ [C7]/[No Limit]
Default is [No Limit]

3.6.3 - SATA Configuration



SATA Mode

[IDE Mode] / [AHCI Mode]/ [RAID Mode]
Default is [IDE Mode]

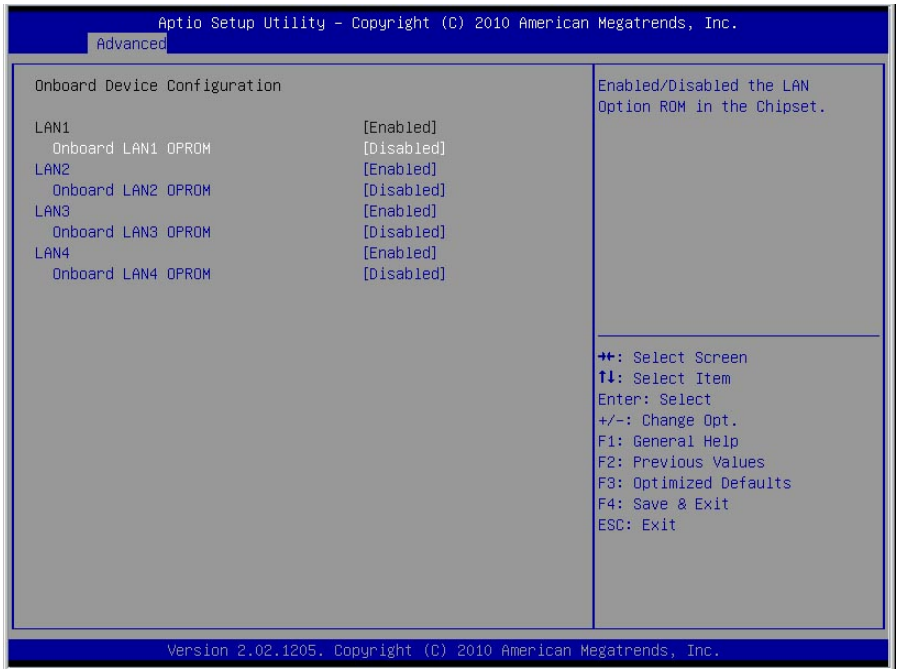
Serial-ATA Controller 0

[Compatible] / [Enabled]
Default is [Enhanced]

Serial-ATA Controller 1

[Enhanced] / [Enabled]
Default is [Enhanced]

3.6.4 - Onboard Device Configuration



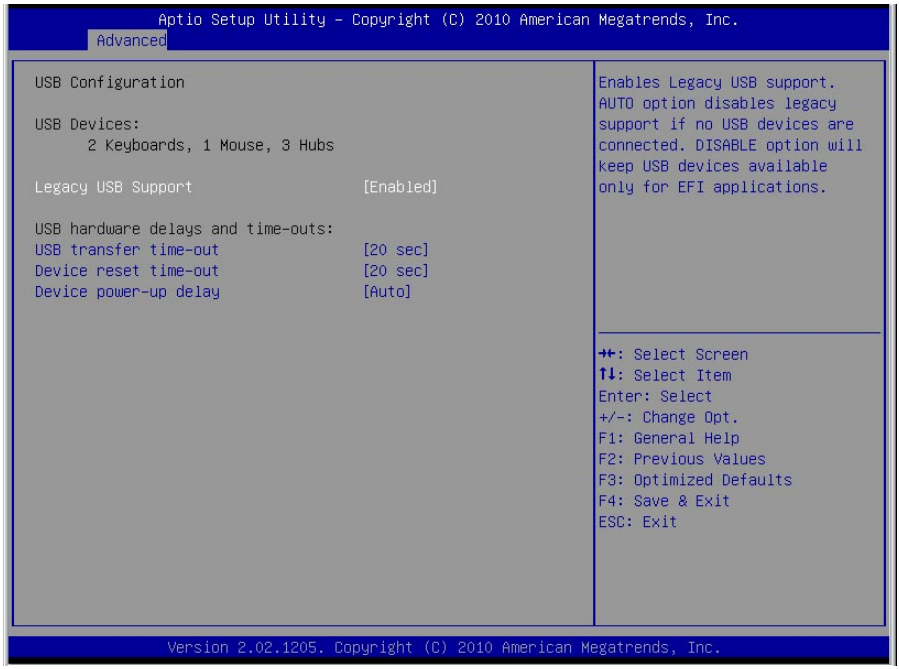
LAN1/LAN2/LAN3/LAN4

Enabled / Disable the PCI Express Ports in the chipset.
[Disabled] / [Enabled]
Default is [Enable]

Onboard LAN1/LAN2/LAN3/LAN4 OPROM

[PXE] / [iSCSI]/ [Disabled]
Default is [Disable]

3.6.5 - USB Configuration


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
2 Keyboards, 1 Mouse, 3 Hubs
Legacy USB Support [Enabled]
USB hardware delays and time-outs:
USB transfer time-out [20 sec]
Device reset time-out [20 sec]
Device power-up delay [Auto]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Legacy USB Support

Enables legacy USB support, Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI application.
[Disabled] / [Enabled] / [Auto]
Default is [Enable]

USB transfer time-out

[1 sec] /[5 sec]/[10 sec]/ [20 sec]
Default is [20 sec]

Device reset time-out

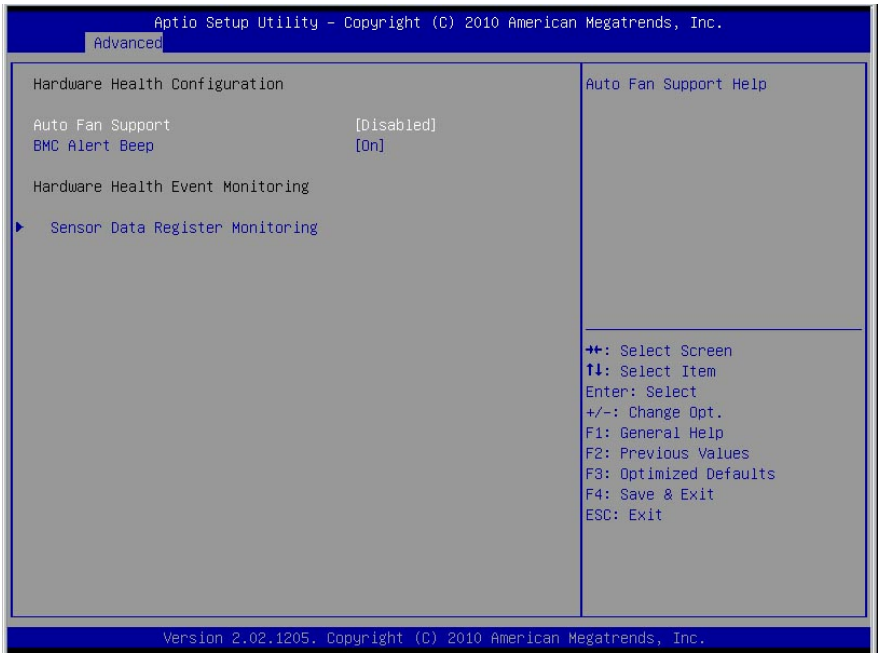
[10 sec] /[20 sec]/[30 sec]/ [40 sec]
Default is [20 sec]

Device Power-up delay

Maximum time the device will take before it properly reports itself to the host controller. ' Auto' uses default value; for a root port it is 100ms,for a Hub port the delay is taken from Hub description.

[Auto] / [Manual]
Default is [Auto]

3.6.6 - Hardware Health Configuration



Auto Fan Support

[Disable] / [Enable]
Default is [Disable]
The disable meaning is FAN Speed running FULL ON

BMC Alert Beep

[On] / [Off]
Default is [On]

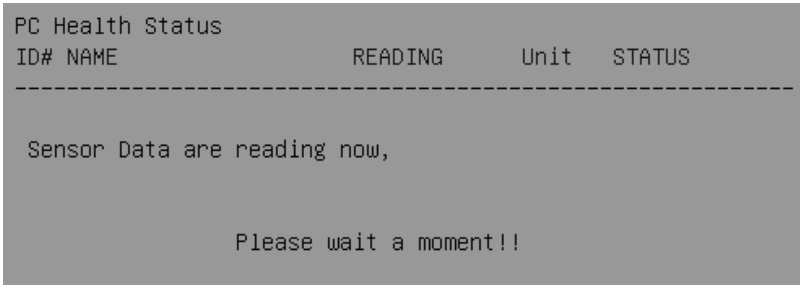
PWM Minimal Duty Cycle

[30% Duty Cycle] / [45% Duty Cycle] / [60% Duty Cycle]
Default is [30% Duty Cycle]
***This item need enable Auto Fan support.**

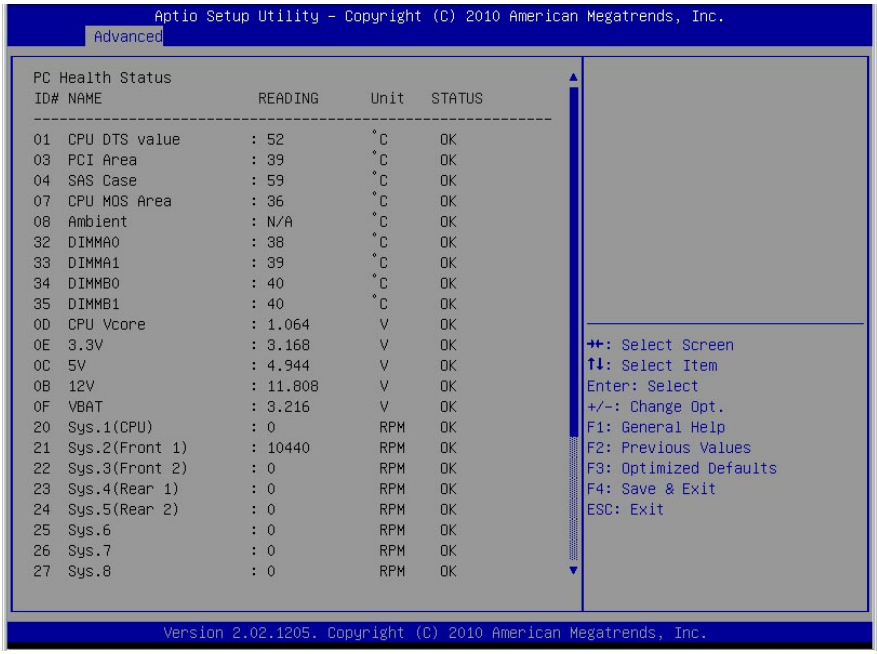
3.6.6.1 - Sensor Data Register Monitoring

Sensor Data Register Monitor

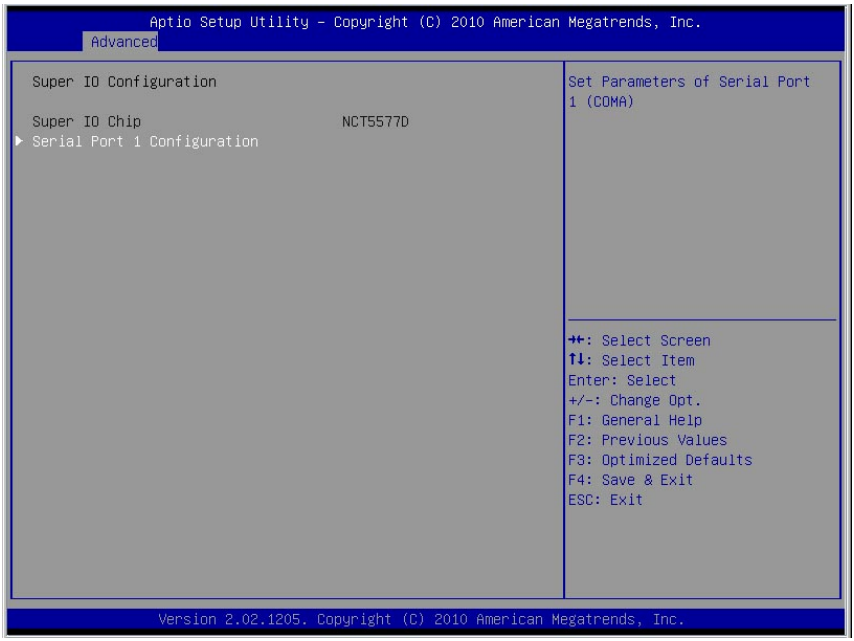
IF you logo in the SDR Page fist, you will see message “Sensor Data are reading Now, Please wait a moment !!” ,this time BIOS gets some SDR form BMC ,please wait about 8~10 second.



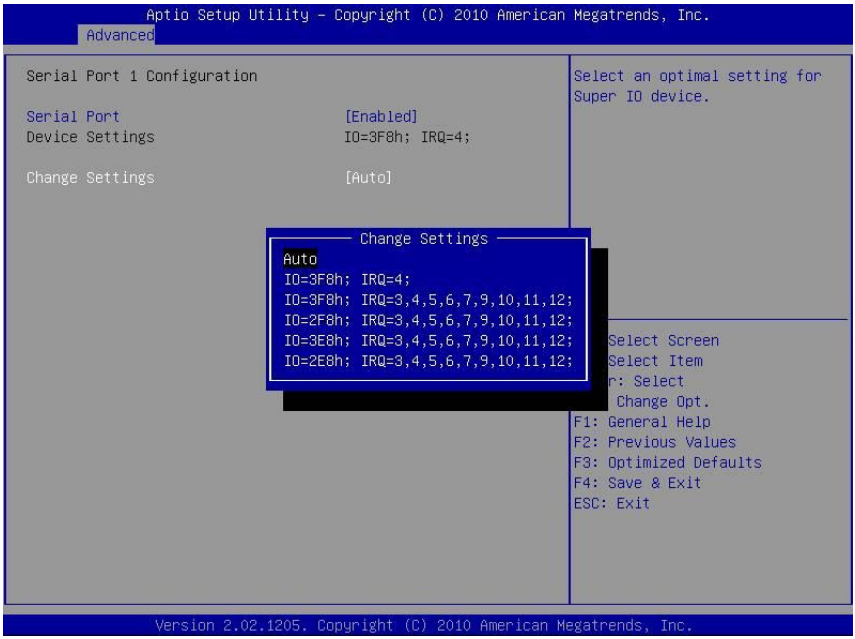
SDR can read FAN, temperature of PCH,CPU,DIMM, Ambient and CPU CMOS Area, Voltage and PSU status. Please see below picture.


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Advanced
PC Health Status
ID# NAME READING Unit STATUS
01 CPU DTS value : 52 °C OK
03 PCI Area : 39 °C OK
04 SAS Case : 59 °C OK
07 CPU MOS Area : 36 °C OK
08 Ambient : N/A °C OK
32 DIMMA0 : 38 °C OK
33 DIMMA1 : 39 °C OK
34 DIMMB0 : 40 °C OK
35 DIMMB1 : 40 °C OK
0D CPU Vcore : 1.064 V OK
0E 3.3V : 3.168 V OK
0C 5V : 4.944 V OK
0B 12V : 11.808 V OK
0F VBAT : 3.216 V OK
20 Sys.1(CPU) : 0 RPM OK
21 Sys.2(Front 1) : 10440 RPM OK
22 Sys.3(Front 2) : 0 RPM OK
23 Sys.4(Rear 1) : 0 RPM OK
24 Sys.5(Rear 2) : 0 RPM OK
25 Sys.6 : 0 RPM OK
26 Sys.7 : 0 RPM OK
27 Sys.8 : 0 RPM OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

3.6.7- Super I/O Configuration



3.6.7.1 - Super I/O Configuration Sub Menu



Serial Port 1 Configuration

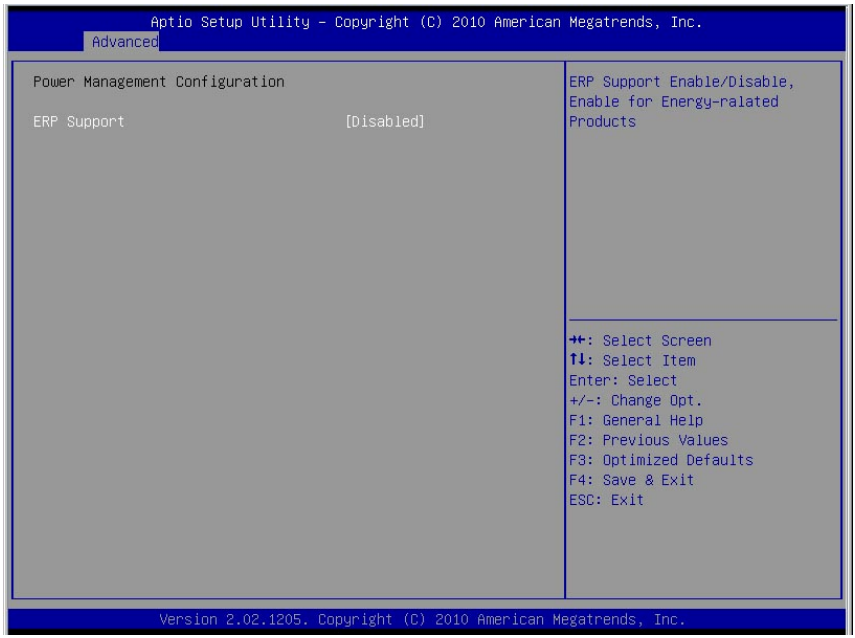
Serial Port

Select IPMI IP Address Source.
[Enabled] / [Disabled]
Default is [Enable]

Change / Setting

Read only. It can not be modified in user mode.
[Auto]
[IO=3F8h; IRQ=4;] , [IO=3F8h; IRQ=3,4,5,6,7,8,9,10,11,12;]
[IO=3E8h; IRQ=3,4,5,6,7,8,9,10,11,12;]
[IO=2F8h; IRQ=3,4,5,6,7,8,9,10,11,12;]
[IO=2E8h; IRQ=3,4,5,6,7,8,9,10,11,12;]
Default is [Auto]

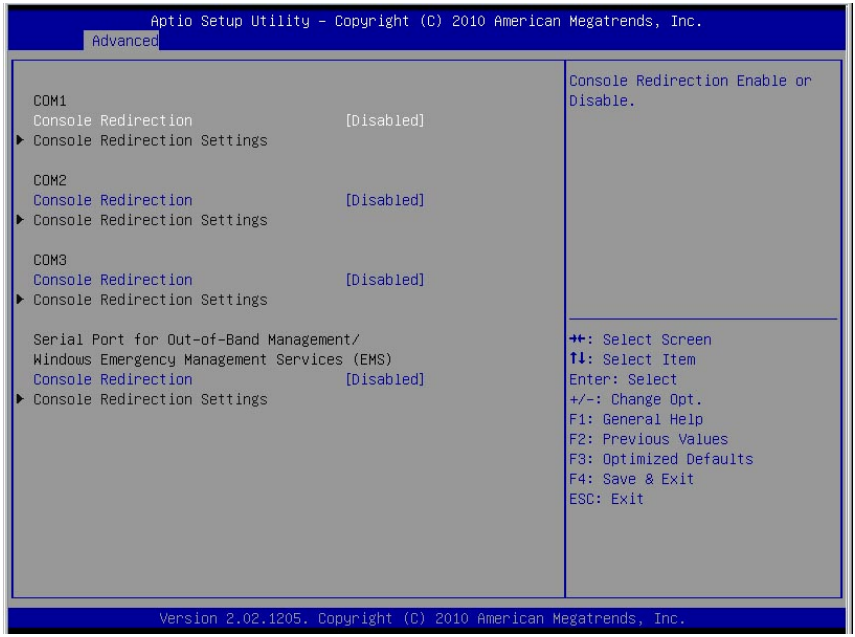
3.6.8 Power Management Configuration



ERP Support

Enable or disable ERP support.
[Enabled] / [Disabled]
Default is [Disable]

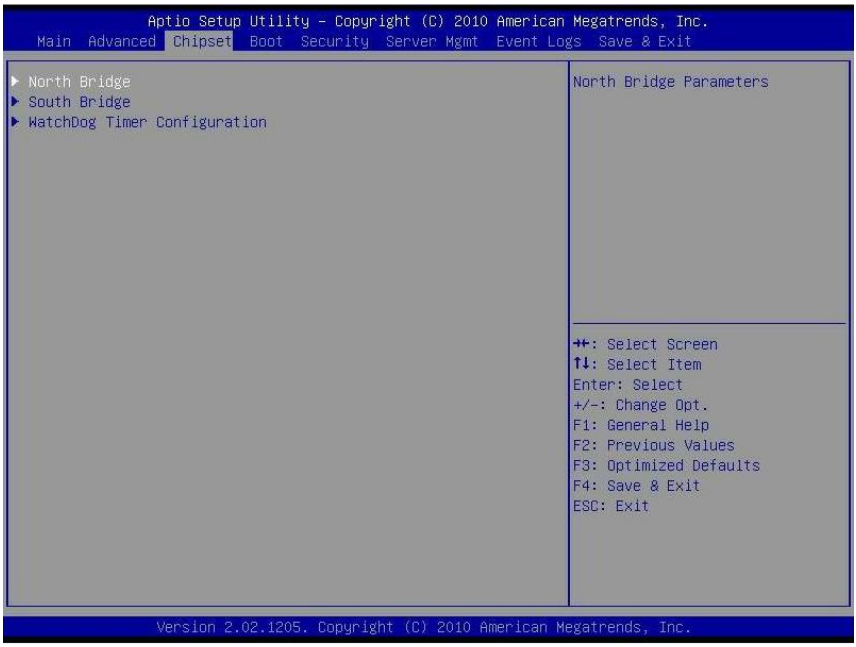
3.6.9 Serial Port Console Redirection



Console Redirection

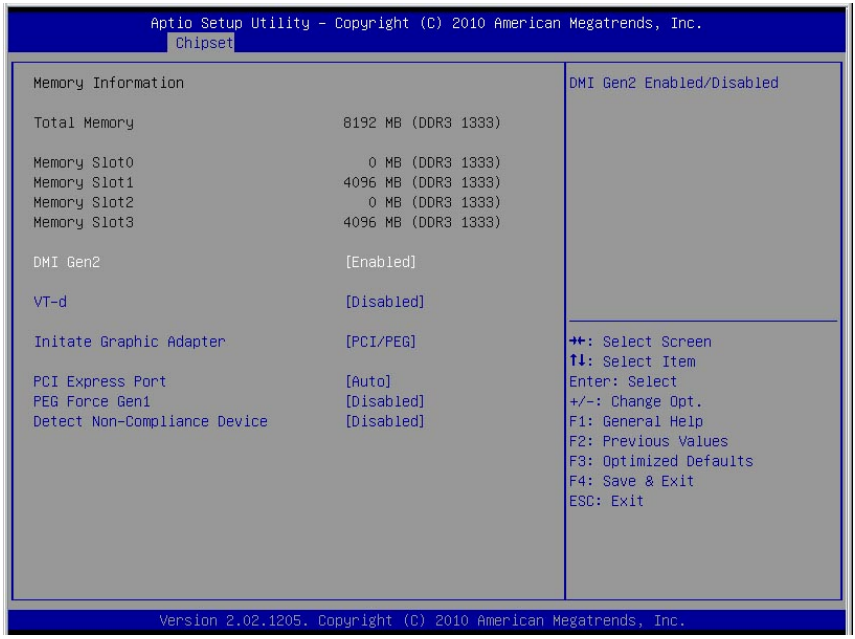
[Enabled] / [Disabled]
Default is [Disable]

3.7 - Chipset Menu


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit
North Bridge
South Bridge
WatchDog Timer Configuration
North Bridge Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Allows you to change NorthBridge, SouthBridge, and WatchDog Timer Configuration

3.7.1 – North Bridge Chipset Configuration Sub- Menu


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Chipset
Memory Information
Total Memory 8192 MB (DDR3 1333)
Memory Slot0 0 MB (DDR3 1333)
Memory Slot1 4096 MB (DDR3 1333)
Memory Slot2 0 MB (DDR3 1333)
Memory Slot3 4096 MB (DDR3 1333)
DMI Gen2 [Enabled]
VT-d [Disabled]
Initate Graphic Adapter [PCI/PEG]
PCI Express Port [Auto]
PEG Force Gen1 [Disabled]
Detect Non-Compliance Device [Disabled]
DMI Gen2 Enabled/Disabled
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

DMI Gen2

[Enabled] / [Disabled]
Default is [Enable]

VT-d

[Enabled] / [Disabled]
Default is [Disable]

Initate Graphic adapter

[IGD] / [PCI/IGD]/ [PCI/PEG]/ [PEG/IGD]/ [PEG/PCI]
Default is [PCI/PEG]

PCI Express Port

Enable or disable bank swizzle mode.
[Enabled] / [Disabled]/[Auto]
Default is [Auto]

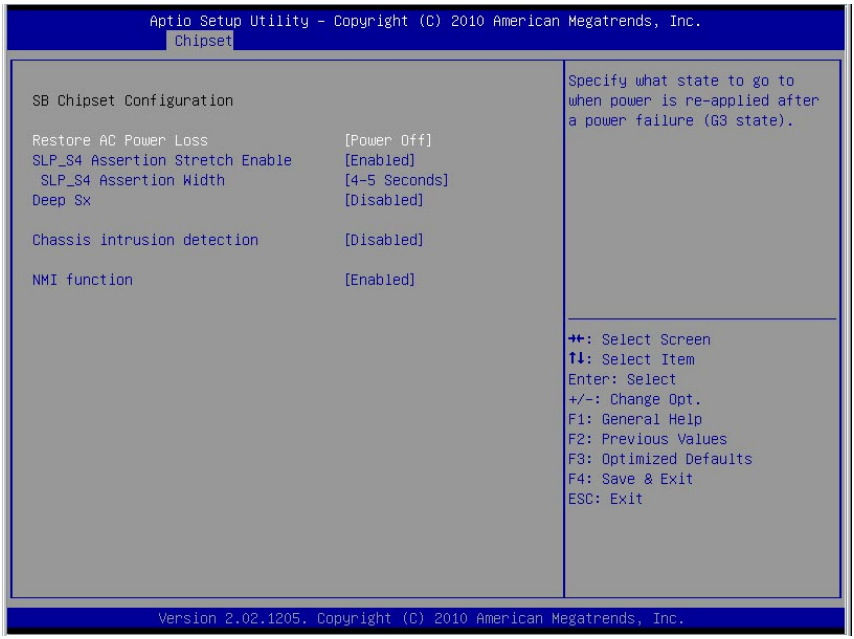
PEG Force Gen1

[Enabled] / [Disabled]
Default is [Disable]

Detect Non-Compliance Device

[Enabled] / [Disabled]
Default is [Disable]

3.7.2 – South Bridge Configuration Sub-Menu


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Chipset
SB Chipset Configuration
Restore AC Power Loss [Power Off]
SLP_S4 Assertion Stretch Enable [Enabled]
SLP_S4 Assertion Width [4-5 Seconds]
Deep Sx [Disabled]
Chassis intrusion detection [Disabled]
NMI function [Enabled]
Specify what state to go to when power is re-applied after a power failure (G3 state).
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Restore AC Power Loss

[Power Off]/[Power On]/ [Last State]
Default is [Power Off]

SLP_S4 Assertion Stretch Enable

[Disabled]/[Enabled]
Default is [Enable]

SLP_S4 Assertion Width

[1-2 Seconds]/[2-3 Seconds]/[3-4 Seconds]/ [4-5 Seconds]
Default is [4-5 Seconds]

Deep Sx

Deep Sx configuration

[Disabled]/[Enabled in S5(Battery)]/[Enabled in S5]/[Enabled in S4 and S5(Battery)]/ [Enabled in S4 and S5]
Default is [Disable]

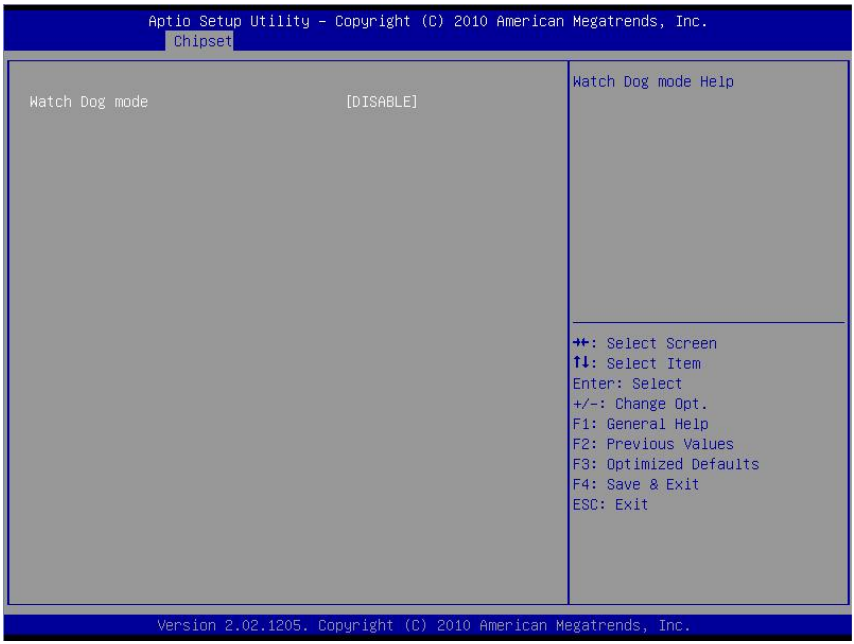
Chassis Intrusion Detection

[Enabled] / [Disabled]
Default is [Disable]

NMI function

[Enabled] / [Disabled]
Default is [Enabled]

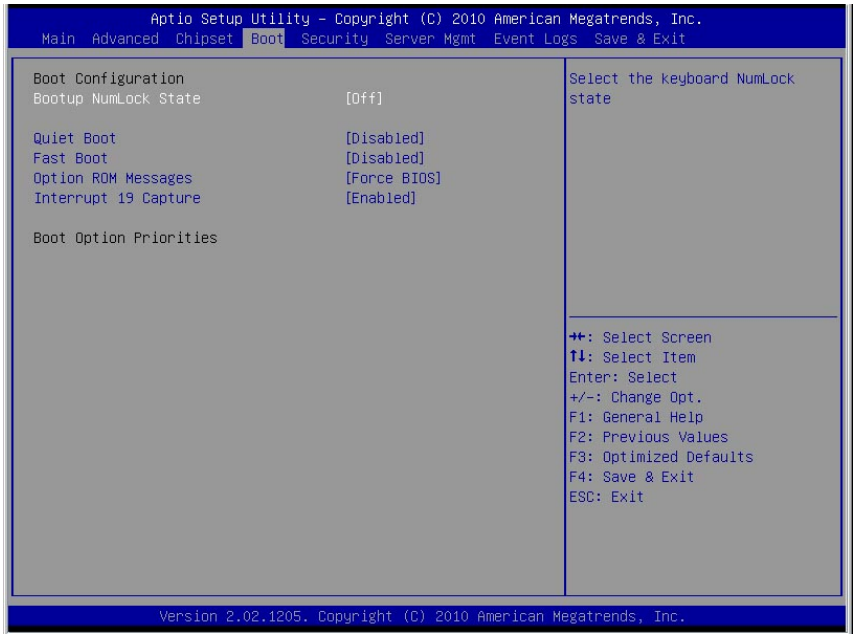
3.7.3 – Watch Dog mode Sub- Menu



Watch Dog mode

[Disable] / [Post]/ [OS]/ [Power ON]
Default is [Disable]

3.8 - Boot Configuration


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit
Boot Configuration
Bootup NumLock State [Off]
Quiet Boot [Disabled]
Fast Boot [Disabled]
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Enabled]
Boot Option Priorities
Select the keyboard NumLock state
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Bootup Numlock State

[On] / [Off]
Default is [Off]

Quiet Boot

[Disabled] / [Enabled]
Default is [Disable]

Fast Boot

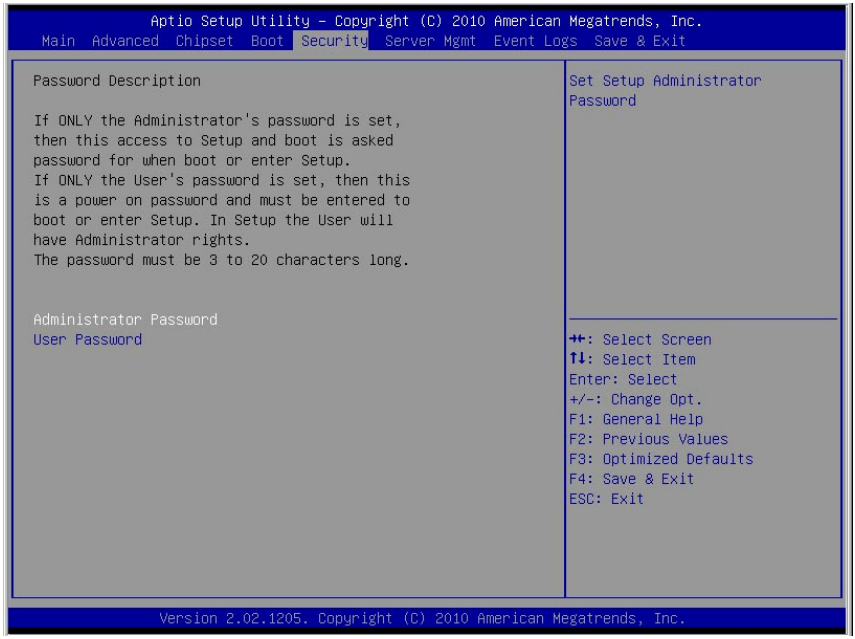
[Disabled] / [Enabled]
Default is [Disable]

Option ROM Messages

[Force BIOS] / [Keep Current]
Default is [Force BIOS]

Interrupt 19 Capture
[Disabled] / [Enabled]
Default is [Disable]

3.9 - Security Menu

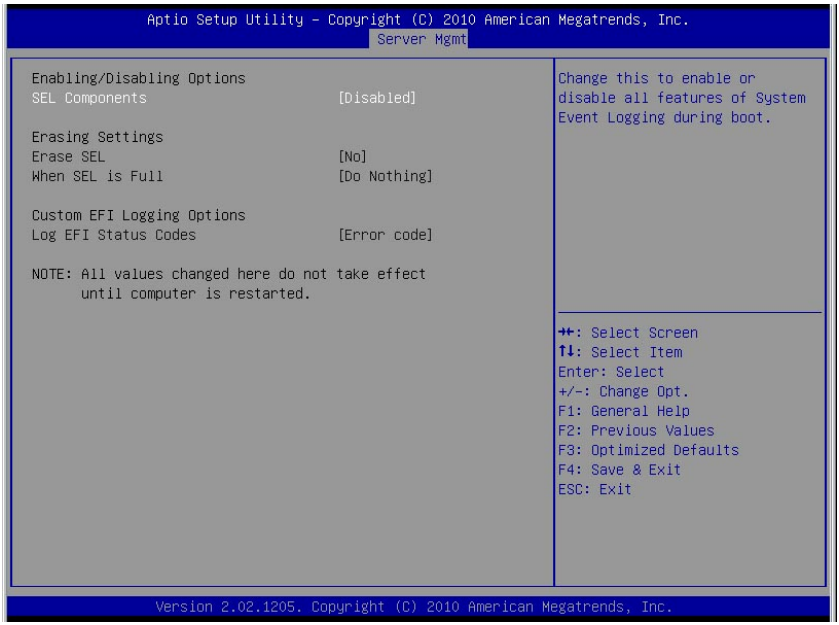

Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit
Password Description
If ONLY the Administrator's password is set, then this access to Setup and boot is asked password for when boot or enter Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password must be 3 to 20 characters long.
Administrator Password
User Password
Set Setup Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Password Description
Read only.
Administrator Password
Install or change the password.
User Password
Install or change the password.

3.10 - Server Mgmt Menu

Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit
System Event Log
BMC network configuration
Press <Enter> to change the SEL event log configuration.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

3.10.1 - System Event Log Sub-Menu


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Server Mgmt
Enabling/Disabling Options
SEL Components [Disabled]
Erasing Settings
Erase SEL [No]
When SEL is Full [Do Nothing]
Custom EFI Logging Options
Log EFI Status Codes [Error code]
NOTE: All values changed here do not take effect until computer is restarted.
Change this to enable or disable all features of System Event Logging during boot.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Enabling/Disabling Options

SEL Components

[Disabled] / [Enabled]
Default is [Disabled]

Erasing Settings

Erase SEL

[No]/[Yes, On next reset]/[Yes, On every reset]
Default is [No]

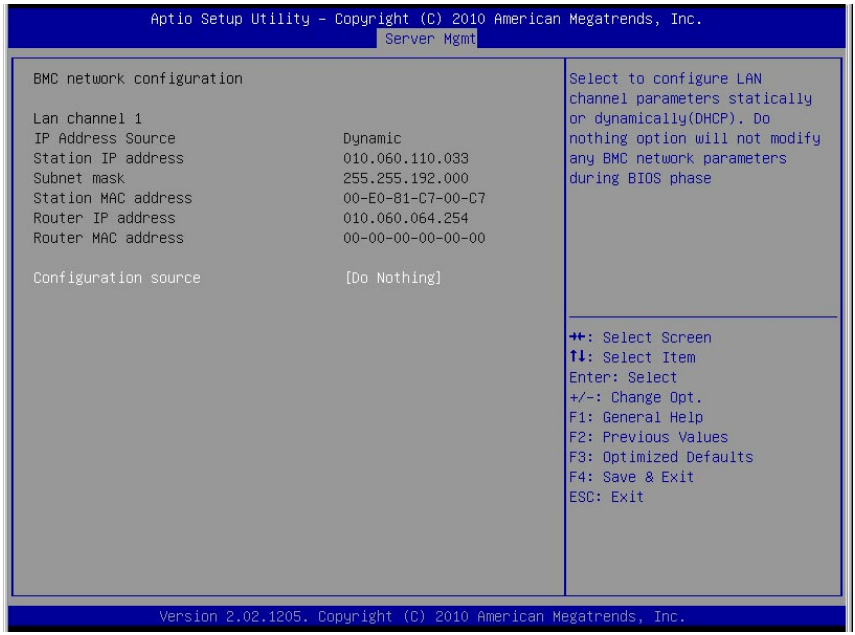
When SEL is FULL

[Do Nothing]/[Erase immediately]
Default is [Do Nothing]

Custom EFI Logging Options

Log EFI Status Codes
[Disabled]/[Both]/[Error code]/[Progress code]
Default is [Error code]

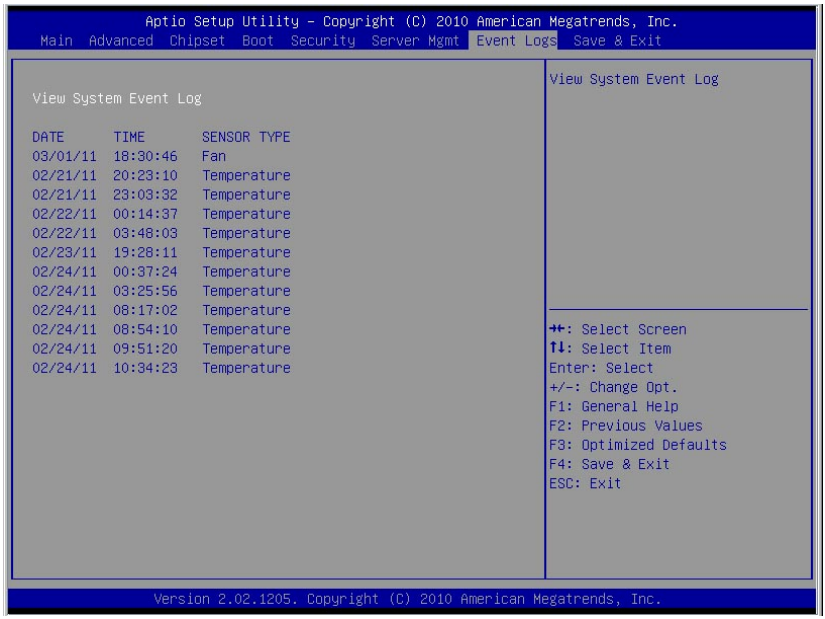
3.10.2 - BMC Network Configuration Sub-Menu


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Server Mgmt
BMC network configuration
Lan channel 1
IP Address Source Dynamic
Station IP address 010.060.110.033
Subnet mask 255.255.192.000
Station MAC address 00-E0-81-C7-00-C7
Router IP address 010.060.064.254
Router MAC address 00-00-00-00-00-00
Configuration source [Do Nothing]
Select to configure LAN channel parameters statically or dynamically(DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Configuration source

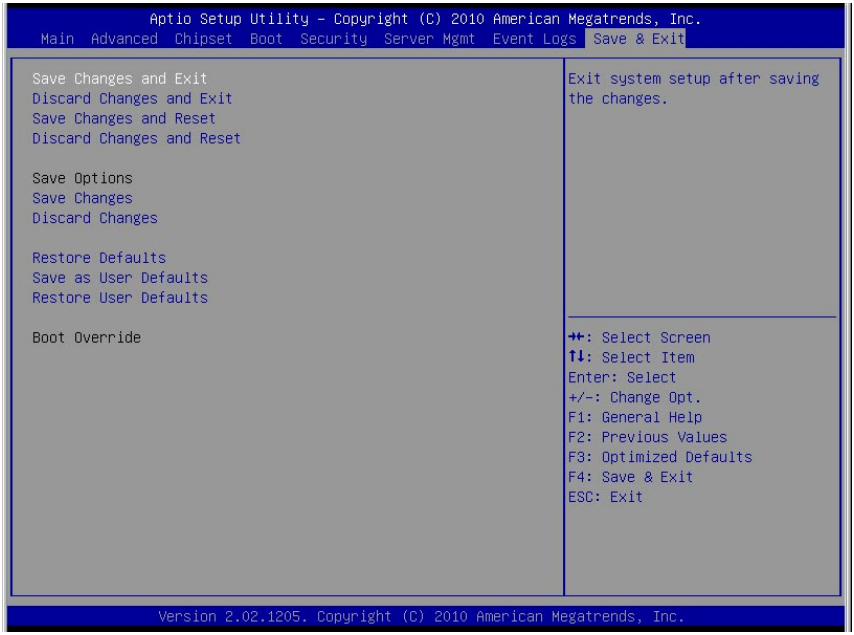
[Static]\[Dynamic]\[Do Nothing]
Default is [Do Nothing]

3.11 - System Event Log



The item view system event log.

3.12 - Save & Exit Menu


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit
Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset
Save Options
Save Changes
Discard Changes
Restore Defaults
Save as User Defaults
Restore User Defaults
Boot Override
Exit system setup after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

Save Changes and Exit

Use this option to exit setup utility and re-boot.
All new selections you have made are stored into CMOS.
System will use the new settings to boot up

Discard Changes and Exit

Use this option to exit setup utility and re-boot.
All new selections you have made are not stored into CMOS.
System will use the old settings to boot up

Save Changes and Reset

Use this option to save all new setup values that you have made and reset

Discard Changes and Reset

Use this option to discard all new setup values that you have made and reset

Save Changes

Use this option to save all new setup values that you have made

Discard Changes

Use this option to load all default failsafe setup values

Restore Defaults

Use this option to restore defaults

Save as user Defaults

Use this option to save the user defaults

Restore user Defaults

Use this option to restore the user defaults

NOTE

Chapter 4: Diagnostics

If you experience problems with setting up your system, always check the following things in the following order:

Memory, Video, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN® website at: http://**www.tyan.com**.

4.1 - Beep Codes

Fatal errors, which halt the boot process, are communicated through two kinds of audible beeps.

- A single long beep followed by two short beeps: It indicates that a Video error has occurred.
- A single long beep repeatedly: It indicates that a DRAM error has occurred. The most common type of error is a memory error.

Before contacting your vendor or TYAN® Technical Support, be sure that you note as much as you can about the beep code length and order that you experience. Also, be ready with information regarding add-in cards, drives and O/S to speed the support process and come to a quicker solution.

4.2 - Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN® web site:

http://www.tyan.com/

4.3 - AMIBIOS Post Code

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint Ranges	
Status Code Range	**Description**
0x01 – 0x0B	SEC execution
0x0C – 0x0F	SEC errors
0x10 – 0x2F	PEI execution up to and including memory detection
0x30 – 0x4F	PEI execution after memory detection
0x50 – 0x5F	PEI errors
0x60 – 0x8F	DXE execution up to BDS.
0x90 – 0xCF	BDS execution
0xD0 – 0xDF	DXE errors
0xE0 – 0xE8	S3 Resume (PEI)
0xE9 – 0xEF	S3 Resume errors (PEI)
0xF0 – 0xF8	Recovery (PEI)
0xF9 – 0xFF	Recovery errors (PEI)
Standard Checkpoint	
SEC Phase	
Status Code	**Description**
0x00	Not used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization
SEC Error Codes	
0x0C – 0x0D	Reserved for future AMI SEC error codes
0x0E	Microcode not found
0x0F	Microcode not loaded
PEI Phase	
Status Code	**Description**
Progress Codes	
0x10	PEI Core is started
0x11	Pre-memory CPU initialization is started
0x12	Pre-memory CPU initialization (CPU module specific)
0x13	Pre-memory CPU initialization (CPU module specific)
0x14	Pre-memory CPU initialization (CPU module specific)
0x15	Pre-memory North Bridge initialization is started
0x16	Pre-Memory North Bridge initialization (North Bridge module specific)
0x17	Pre-Memory North Bridge initialization (North Bridge module specific)
0x18	Pre-Memory North Bridge initialization (North Bridge module specific)
0x19	Pre-memory South Bridge initialization is started
0x1A	Pre-memory South Bridge initialization (South Bridge module specific)
0x1B	Pre-memory South Bridge initialization (South Bridge module specific)
0x1C	Pre-memory South Bridge initialization (South Bridge module specific)

Checkpoint Ranges	
Status Code Range	**Description**
0x1D – 0x2A	OEM pre-memory initialization codes
0x2B	Memory initialization. Serial Presence Detect (SPD) data reading
0x2C	Memory initialization. Memory presence detection
0x2D	Memory initialization. Programming memory timing information
0x2E	Memory initialization. Configuring memory
0x2F	Memory initialization (other).
0x30	Reserved for ASL (see ASL Status Codes section below)
0x31	Memory Installed
0x32	CPU post-memory initialization is started
0x33	CPU post-memory initialization. Cache initialization
0x34	CPU post-memory initialization. Application Processor(s) (AP) initialization
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode (SMM) initialization
0x37	Post-Memory North Bridge initialization is started
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F-0x4E	OEM post memory initialization codes
0x4F	DXE IPL is started
PEI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error.
0x55	Memory not installed
0x56	Invalid CPU type or Speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU micro-code is not found or micro-code update is failed
0x5A	Internal CPU error
0x5B	reset PPI is not available
0x5C-0x5F	Reserved for future AMI error codes
S3 Resume Progress Codes	
0xE0	S3 Resume is stared (S3 Resume PPI is called by the DXE IPL)

Checkpoint Ranges	
Status Code Range	**Description**
0xE1	S3 Boot Script execution
0xE2	Video repost
0xE3	OS S3 wake vector call
0xE4-0xE7	Reserved for future AMI progress codes
S3 Resume Error Codes	
0xE8	S3 Resume Failed
0xE9	S3 Resume PPI not Found
0xEA	S3 Resume Boot Script Error
0xEB	S3 OS Wake Error
0xEC-0xEF	Reserved for future AMI error codes
Recovery Progress Codes	
0xF0	Recovery condition triggered by firmware (Auto recovery)
0xF1	Recovery condition triggered by user (Forced recovery)
0xF2	Recovery process started
0xF3	Recovery firmware image is found
0xF4	Recovery firmware image is loaded
0xF5-0xF7	Reserved for future AMI progress codes
Recovery Error Codes	
0xF8	Recovery PPI is not available
0xF9	Recovery capsule is not found
0xFA	Invalid recovery capsule
0xFB – 0xFF	Reserved for future AMI error codes
PEI Beep Codes	
# of Beeps	**Description**
1	Memory not Installed
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available
DXE Phase	
Status Code	**Description**
0x60	DXE Core is started
0x61	NVRAM initialization
0x62	Installation of the South Bridge Runtime Services
0x63	CPU DXE initialization is started
0x64	CPU DXE initialization (CPU module specific)
0x65	CPU DXE initialization (CPU module specific)
0x66	CPU DXE initialization (CPU module specific)
0x67	CPU DXE initialization (CPU module specific)
0x68	PCI host bridge initialization
0x69	North Bridge DXE initialization is started

Checkpoint Ranges	
Status Code Range	**Description**
0x6A	North Bridge DXE SMM initialization is started
0x6B	North Bridge DXE initialization (North Bridge module specific)
0x6C	North Bridge DXE initialization (North Bridge module specific)
0x6D	North Bridge DXE initialization (North Bridge module specific)
0x6E	North Bridge DXE initialization (North Bridge module specific)
0x6F	North Bridge DXE initialization (North Bridge module specific)
0x70	South Bridge DXE initialization is started
0x71	South Bridge DXE SMM initialization is started
0x72	South Bridge devices initialization
0x73	South Bridge DXE Initialization (South Bridge module specific)
0x74	South Bridge DXE Initialization (South Bridge module specific)
0x75	South Bridge DXE Initialization (South Bridge module specific)
0x76	South Bridge DXE Initialization (South Bridge module specific)
0x77	South Bridge DXE Initialization (South Bridge module specific)
0x78	ACPI module initialization
0x79	CSM initialization
0x7A – 0x7F	Reserved for future AMI DXE codes
0x80 – 0x8F	OEM DXE initialization codes
0x90	Boot Device Selection (BDS) phase is started
0x91	Driver connecting is started
0x92	PCI Bus initialization is started
0x93	PCI Bus Hot Plug Controller Initialization
0x94	PCI Bus Enumeration
0x95	PCI Bus Request Resources
0x96	PCI Bus Assign Resources
0x97	Console Output devices connect
0x98	Console input devices connect
0x99	Super IO Initialization
0x9A	USB initialization is started
0x9B	USB Reset
0x9C	USB Detect
0x9D	USB Enable
0x9E – 0x9F	Reserved for future AMI codes
0xA0	IDE initialization is started
0xA1	IDE Reset
0xA2	IDE Detect
0xA3	IDE Enable
0xA4	SCSI initialization is started
0xA5	SCSI Reset
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ASL Status Codes section below)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ASL Status Codes section below)
0xAD	Ready To Boot event
0xAE	Legacy Boot event
0xAF	Exit Boot Services event
0xB0	Runtime Set Virtual Address MAP Begin

Checkpoint Ranges	
Status Code Range	**Description**
0xB1	Runtime Set Virtual Address MAP End
0xB2	Legacy Option ROM Initialization
0xB3	System Reset
0xB4	USB hot plug
0xB5	PCI bus hot plug
0xB6	Clean-up of NVRAM
0xB7	Configuration Reset (reset of NVRAM settings)
0xB8 – 0xBF	Reserved for future AMI codes
0xC0 – 0xCF	OEM BDS initialization codes
DXE Error Codes	
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found
0xD7	No Console Input Devices are found
0xD8	Invalid password
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error)
0xDB	Flash update is failed
0xDC	Reset protocol is not available
DXE Beep Codes	
# of Beeps	**Description**
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met
ACPI/ASL Checkpoints	
Status Code	**Description**
0x01	System is entering S1 sleep state
0x02	System is entering S2 sleep state
0x03	System is entering S3 sleep state
0x04	System is entering S4 sleep state
0x05	System is entering S5 sleep state
0x10	System is waking up from the S1 sleep state
0x20	System is waking up from the S2 sleep state
0x30	System is waking up from the S3 sleep state
0x40	System is waking up from the S4 sleep state
0xAC	System has transitioned into ACPI mode. Interrupt controller is in PIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

Checkpoint Ranges	
Status Code Range	**Description**
OEM-Reserved Checkpoint Ranges	
Status Code	**Description**
0x05	OEM SEC initialization before microcode loading
0x0A	OEM SEC initialization after microcode loading
0x1D – 0x2A	OEM pre-memory initialization codes
0x3F – 0x4E	OEM PEI post memory initialization codes
0x80 – 0x8F	OEM DXE initialization codes
0xC0 – 0xCF	OEM BDS initialization codes

Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN® does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN® be held responsible for damages done by the end user.

Glossary

ACPI (Advanced Configuration and Power Interface): a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

Bandwidth: refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path can carry. Greater bandwidth results in greater speed.

BBS (BIOS Boot Specification): a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that resides in the ROM chip, which provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

Buffer: a portion of RAM which is used to temporarily store data; usually from an application though it is also used when printing and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it to a disk drive. While this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of losing your data should the system crash. Information in a buffer is temporarily stored, not permanently saved.

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times since the information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Closed and open jumpers: jumpers and jumper pins are active when they are "on" or "closed", and inactive when they are "off" or "open".

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DDR (Double Data Rate): a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank: sometimes called DIMM socket because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA (Direct Memory Access): channels which are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

DRAM (Dynamic RAM): widely available, very affordable form of RAM which looses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

EEPROM (Electrically Erasable Programmable ROM): also called Flash BIOS, it is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN®'s BIOS updates can be found at http://www.tyan.com

ESCD (Extended System Configuration Data): a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

HyperTransport™: a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

IC (Integrated Circuit): the formal name for the computer chip.

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

IDE INT (IDE Interrupt): a hardware interrupt signal that goes to the IDE.

I/O (Input/Output): the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one

device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

NVRAM: ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

Parallel port: transmits the bits of a byte on eight different wires at the same time.

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI Bridge: allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

PXE (Preboot Execution Environment): one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was designed to define a standard set of preboot protocol services within a client with the goal of allowing networked-based booting to boot using industry standard protocols.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly and multiple hard drives will appear as a single drive

to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

RAIDIOS: RAID I/O Steering (Intel)

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data and is often referred to the system's main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

Serial port: called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SCSI Interrupt Steering Logic (SISL): Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses. SISL: SCSI Interrupt Steering Logic (LSI) (only on LSI SCSI boards)

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SDRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

SLI (Scalable Link Interface): NVIDIA SLI technology links two graphics cards together to provide scalability and increased performance. NVIDIA SLI takes advantage of the increased bandwidth of the PCI Express bus architecture, and features hardware and software innovations within NVIDIA GPUs (graphics processing units) and NVIDIA MCPs (media and communications processors). Depending on the application, NVIDIA SLI can deliver as much as two times the performance of a single GPU configuration.

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without a proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

USB (Universal Serial Bus): a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array): the PC video display standard

V-SYNC: controls the vertical scanning properties of the monitor.

ZCR (Zero Channel RAID): PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shifts the processor over and down, guiding it into the board and locking it into place.

Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then TYAN® Computer Corporation can help. Besides designing innovative and quality products for over a decade, TYAN® has continuously offered customers service beyond their expectations. TYAN®'s website (**www.TYAN.com**) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. TYAN® also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, TYAN® serves multiple market segments with the industry's most competitive services to support them.

"TYAN's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general"

----Anandtech.com

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN® website for FAQ's, bulletins, driver updates, and other information: **http://www.TYAN.com**
3. Contact your dealer for help BEFORE calling TYAN®.
4. Check the TYAN® user group:
   alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number.The RMA number Should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN® will pay to have the board shipped back to you.

Notice for the USA

Compliance Information Statement (Declaration of Conformity Procedure) DoC

FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

·This device must not cause harmful interference.

·This device must accept any interference received, including interference that may cause undesirable operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice for Canada

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

Notice for Europe (CE Mark)

This product is in conformity with the Council Directive 2004/108/EC.

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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